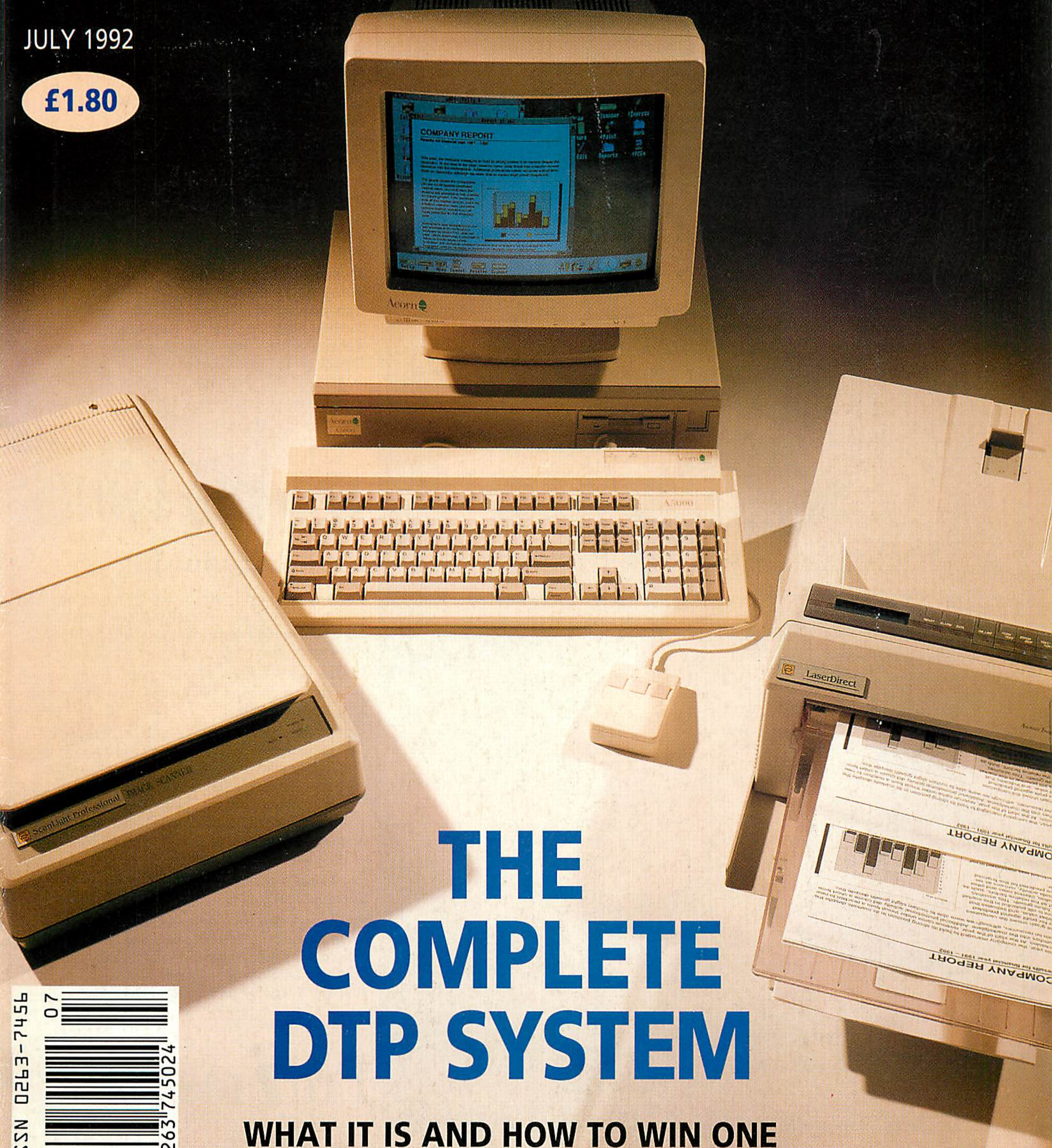
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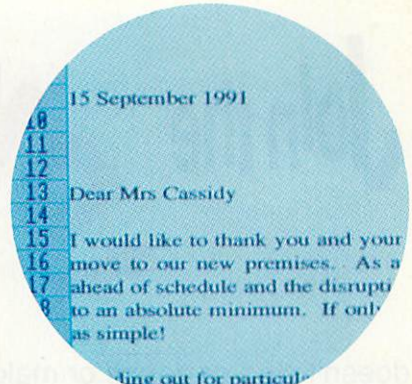
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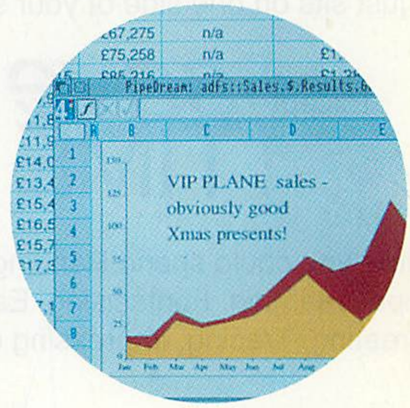
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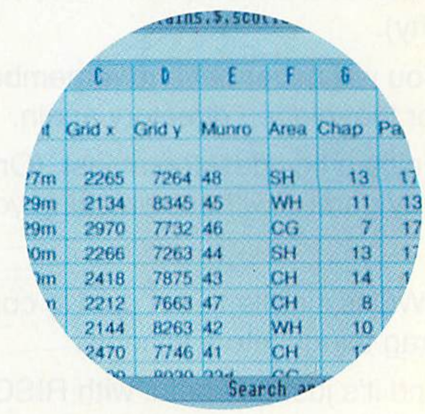
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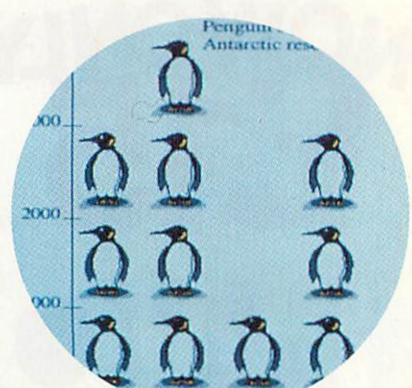
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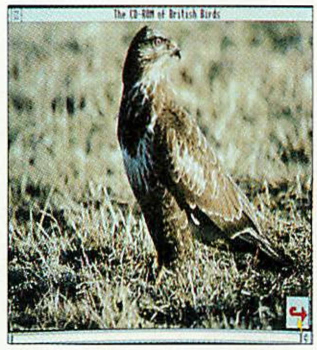
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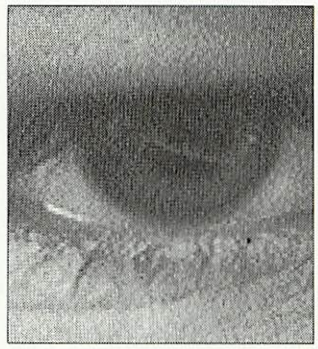
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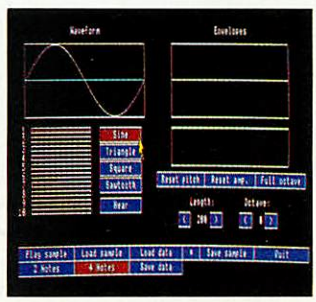
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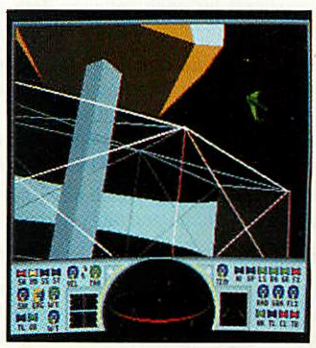
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JUNE 1992

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smArt Dinosaurs / Faces / Faces (French) / Faces (German) / Fashion / Heraldry / Homes / Homes (French) / Homes (German) / Leisure / Leisure (French) / Leisure (German) / Look Smart / Modern Languages / Smartoons / Trees and Gardens – each	4mation	£15
smArtFiler	4mation	£32
Snippet	4mation	£26
SolidCAD	Silicon	£115
SolidsRender	Silicon	£115
SolidTools	Silicon	£269
Spark	David Pilling	£5
Sparkle	Morley	£59
Special	ICS	£10
– site licence		£30
Speech!	Superior	£14
Spelling week-by-week	Chalksoft	£22
Splice	Ace	£29
Sporting Triangles	CDS	£20
Sports Day	Selective	£22
Square Route	Computer Eyes	£16
Stock Management	Minerva	£78
Studio24Plus Version 2, age 11+	EMR	£149
Studio24Plus Version 3, age 12+	EMR	£210
Super-Dump	Silicon	£20
Superior Golf	Superior	£14
Super-Plot	Silicon	£28
Supersounds	CIS	£15
Supersounds 2	CIS	£12
Swiv	Krisalis	£19
System Delta Plus II	Minerva	£50
– Reference Guide	Minerva	vo £25
TABS	ExpLAN	£95
Tactic	Eterna	£15
Talisman	Minerva	£8•
Target Maths	Triple R	£15
TechWriter	Icon	£245
Telling the Time, age 3-12	Rainbow	£7
Thesaurus	CC	£38•
Thundermonk	Minerva	£8•
Timetabler	Minerva	£549
TimeWatch	Mitre	£24
Tiny Logo + Tiny Draw	Topologika	£27
Titler	Clares	£120
Toolkit Plus	Clares	£35
Tools Graphics, drawfiles	Micro Studio	£23
Top Banana	Hex	£19
Touch Type	Iota	£39
Tower of Babel	Cygnus	£17
Trace	David Pilling	£5
Tracer	Midnight	£46
Tracker	Vertical Twist	£37
Transport, drawfiles	Micro Studio	£25
Trivial Pursuit	Domark	£22
Turbo Type	CIS	£20
Tween	Ace	£29

Twin	Acorn	£24
Twin World	UBI Soft	£14
TWO (Task and Window Organiser)	ICS	£15•
– site licence		£60
TypeStudio	RISC	£43
Utility Disc 1	Data Store	**£8**
Utility Disc 2	Data Store	£13
Utility Disc 3	Data Store	£7
Utility Collection	Data Store	£21
Vector	4mation	**£79•**
View»Mac 3	Human	£65
– Arc/Mac Cable	Human	£24
Vox Box	Clares	£47
Waterloo		£23
Wimp Game	Fourth Dim	£16
Wonderland	Virgin	£24
Words and Pictures	Chalksoft	£17
World Championship Boxing Manager	Krisalis	£20
World Geography Maps, draw	Micro Studio	£23
World Map Study, age 7-16	ESM	£42
World Wildlife, sprites	Micro Studio	£16
Worra Battle	Oak	£14
WorraCAD	Oak	£83
X-Fire	Fourth Dim	£21
Z88: A Dabhand Guide	Dabs	vo £15
Z88 PipeDream Guide	Dabs	vo £15
Zarch	Superior	£14
Zelanites	Micro Power	£18•

HARDWARE

A5000 COMPUTERS

2Mb Hard Disc Colour System	Acorn	£1499
– as above + Learning Curve		£1530

(Finance & special purchase schemes available)

MEMORY

Fitting extra unless otherwise stated
† Fitting easy ‡ Fitting needs expertise

A3000 2 Mb Non-upgradable †	IFEL	£55
A3000 2 Mb Upgradable †	IFEL	£63
A3000 4 Mb †	Atomwide/IFEL	£140
A310 2 Mb Upgradable soldered ‡	IFEL	£99
– as above + MEMC1a		£149
– as above + MEMC1a + fitting		£200
A310 4 Mb soldered + MEMC1a ‡	IFEL	£225
– as above + fitting		£277
– as above + fitting + OS3 carriers		£298
A5000 2-4 Mb Non-upgradable †	Atomwide	**£88•**
A5000 2-4 Mb Upgradable †	Atomwide	£109
A5000 2-8 Mb including fitting	Atomwide	£500
A5000 4-8 Mb including fitting	Atomwide	£391
A540 4 Mb †	Atomwide	£268

ideA'92
The new generation
Please see separate price list

MISCELLANEOUS

386C PC Expansion Card	Aleph One	
– 1 Mb		£463
– 4 Mb		£579
4-slot 4-layer Backplane	IFEL	£59
9060S Monitor	Eizo	£450
9070S Monitor	Eizo	£640
A300/400 Fan kit	ICS	£15
A310 RISC OS Carrier Board ‡	IFEL	£25
A5000 Fitting Kit for second hard disc	ICS	£15
ARM3 ‡	Aleph One	£199
Clares Micro Mouse	Clares	£26
Dongle Dangle with screw fittings	ICS	£6
Fan filters (pack of 10)	ICS	£6•
FaxPack	CC	£289
Monitor Stand for A3000	ICS	£18
Podule Case for A3000		£16
TouchWindow	Lindis	£234

ICS

051-625 1006

Whisper Fan Quietener (for A300/A400 series only)	ICS	£15

Whisper Keeps the fans quiet

HIGH DENSITY 3½" FLOPPY DISCS

Pack of 10	£13

PRINTERS

ArcLaser 300-6	Calligraph	£895
ArcServer 300-8	Calligraph	£985
Bubble Jet BJ-10e	Canon	£205
Bubble Jet BJ10ex + TurboDriver	Canon/CC	£248
Bubble Jet BJ-300	Canon	£360
Bubble Jet BJ-330	Canon	£405
Bubble Jet BJC800 + TurboDriver	Canon/CC	£1889
Laser Direct HiRes4 with 50-sheet tray	CC	£885
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8	CC	£1280
Laser Direct LBP-4 Card	CC	£325
LBP-4	Canon	£659
Refill toner cartridge for Canon EPS		£50
New toner cartridge for Canon LBP-4		£59

SCANNERS, DIGITISERS

ArcScanner including Epson GT-4000	Clares	£1660
FaxScan	Spacetech	£94
FX9600AT + Maintenance	Amstrad	£376
Hawk V9	Wild Vision	£199
– A3000 version	Wild Vision	£278
Image (colour)	Irlam	£589
Image Scanner	Iota	£383•
– Colour upgrade	Iota	£148•
– Fast parallel card	Iota	£98•
– Lighting unit	Iota	£91•
i-Scan 200	Irlam	£539
i-Scan 400	Irlam	£589
Pineapple Colour Video Digitiser	Pineapple	£195
– A3000 boxed	Pineapple	£230
Scan-Light A4	CC	£277
– with Sheet Feeder	CC	£370
Scan-Light Junior 256	CC	£199
– A3000 internal	CC	£199
Scan-Light Professional	CC	£825
– as above + SCSI interface	CC	£910
SnapShot Colour Video Digitiser	Lingenuity	£195
– A3000 version	Lingenuity	£275
Spectra	RISC	£545
– A3000 Internal	RISC	£545
– A3000 External	RISC	£565
Video Digitiser	HCCS	£49

I²C PRODUCTS

AnDi Oddule	Baildon	£49
I²C Adaptor (needed unless you already have an I²C socket)	Baildon	£10
I²C SWI (enhanced IIC_Control)	Baildon	£15
– bought with Oddule		£5

KEYBOARD COVERS

Seal 'n Type (spill-proof)		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14

FUNCTION KEY STRIP ORGANISER

Arckey	ICS	vo £3
– pack of 4		vo £10

AUTHORISED ACORN DEALER

ICS (Ian Copestake Software)

Dept B32, 1 Kington road, West Kirby, WIRRAL, Merseyside, L48 5ET

Tel: 051-625 1006 Fax: 051-625 1007

E&OE B32 92MY21

LICENSED CREDIT BROKER



NATIONWIDE SPORTS CHALLENGE

READERS of *BBC Acorn User* are being invited to pit their skills against the best of British athletes. As revealed exclusively in last month's *BAU* Game Show column, British Olympic athletics stars – including Fatima Whitbread – have been lined up for the launch of *Quest for Gold*, a new five-event athletics simulation for the Archimedes by Krisalis Software.

To coincide with the launch of the Acorn version of the simulation, a nationwide Acorn Challenge is being set up on Saturday July 4, encouraging players to go to a local Acorn dealer and pit their skills against the Olympic athletes featured in the simulation.

Developed in close co-operation with Fatima Whitbread, the game includes a host of star athletes including: Linford Christie, John Regis, Sally Gunnel, Yvonne Murray, Colin Jackson, Dalton Grant and Steve Backley.



Top athlete Fatima Whitbread invites readers to take the Acorn Challenge

Each player will have to train their team and then compete in one of five simulated athletics events. Each competitor will receive a certificate, with the opportunity of winning one of several hundred prizes, including T-shirts and posters. The winners of the regional heats will be invited to the national final in August, with the chance to win a family trip to a 'major athletics event' and to meet the athletes.

Anyone wishing to get some practice in prior to the Acorn Challenge on July 4 can obtain a copy of *Quest for Gold* from their local Acorn dealer. For a list of locations for the Acorn Challenge, tel: (0800) 678888.

ACORN'S SHARE PRICE TAKES A LEAP

ACORN'S share price leapt up almost athletically following the publication last month of the company's end-of-year financial results. In the space of just one month Acorn shares rose from just 6p to 28.5p, a 375 percent increase. According to a Stock Exchange source, demand for Acorn shares outstripped supplies and we know of several disappointed potential buyers.

Acorn's managing director, Sam Wauchope, told *BAU* that he was pleased that the share price had finally got off the ground: 'There was no way that the 6p price earlier this year did Acorn's true value any justice,' he said, 'At this stage I'd be happy with the price holding at around 25p, which roughly values the company at about £17 million.'

Exactly why Acorn's share price rocketed is not easy to pinpoint. Wauchope thinks that it was a combination of, rather than any specific, factors, which included the better than expected second half of the last financial year figures and publicity regarding the recent Tesco 'Computers in Schools promotion' (see page 13 for more details).

Another factor was probably speculation regarding the potential success of Acorn subsidiary, Arm Ltd. Last month we brought news of Arm's new 610 Risc processor, while in the States there has been much speculation that Apple is to use Arm technology in revolutionary new products (see story top right).

Acorn does not stand to gain much cash benefit from Arm Ltd unless a shareholders' dividend is issued, but being a 46 percent shareholder, that proportion of Arm Ltd's future profits will show up on Acorn's bottom line. If Apple succeeds in boosting Arm Risc technology, many new doors into the lucrative embedded processor market could at last be opened. As we went to press, Acorn's shares had floated back down a few pence to around 24p – still 300 percent higher than the previous month's 6p low.

NEWS IN BRIEF

● UNOFFICIAL reports from the USA have hinted that the first fruits of Apple Computer's investment in Arm Ltd were due to be unveiled at a major consumer electronics exhibition in Chicago just before we went to press. Apple and Acorn have shares of 46 percent each in Arm Ltd, while chip manufacturer VLSI Technology has the remaining share.

Leaks emanating States-side indicate that Apple is about to unveil a revolutionary Arm-based pen-sensitive pocket computer, code-named Newton, which Apple describes as a 'personal digital assistant' (PDA). Indications are that the Newton is Filofax-sized and will accept hand-written input via a pen-sensitive LCD screen. Projected pricing is around $750 (£325). Our information is that the Newton PDA has a completely new operating system and is unlikely to be software compatible with Risc OS, or even Apple's own Macintosh operating system.

Last year Apple confirmed it was to utilise Arm processor technology, probably the new Arm 610, developed from the family of chips used in the Acorn Archimedes computer. Apple's senior technical development director has publicly praised the Arm saying it is ideal for portable applications because of its compact design and very low power consumption in relation to its computing power.

BAU is covering the Consumer Electronics Show in Chicago and if Apple does launch the Newton, we hope to be the first to bring detailed news.

● AN ANNUAL subscription service for Archimedes users fearing the threat of software viruses has been launched by Pineapple Software. The £24 plus VAT non-profit making service buys a database of all known Archimedes software viruses, plus a suite of protection software utilities developed under licence from Acorn. The disc will be updated regularly and registered customers will have access to an on-site anti-virus service in cases where extreme problems have developed. Contact Pineapple on 081-599 1476.

TECHWRITER HITS RIGHT FORMULA

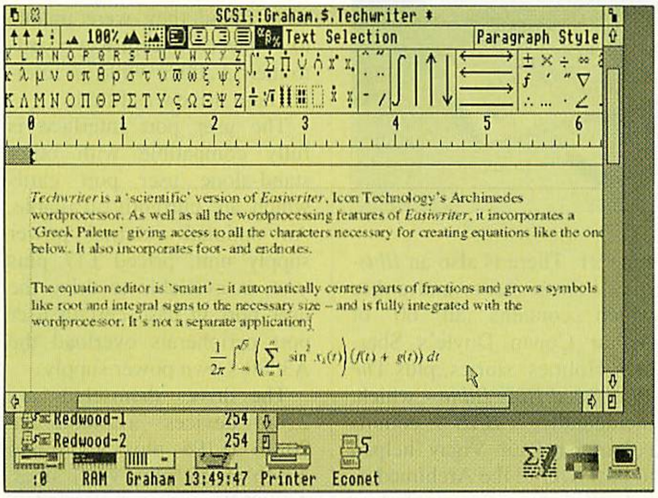
LOOKING for an advanced word processor that can deal with complex formulae? Then Icon Technology's *Techwriter* could be the answer.

Described as '*Easiwriter's* big brother', *Techwriter* has all the features of the former, but includes formulae creation and editing and does not require a separate application to create *Draw* files. Users can simply create a formula using a menu option.

Components of the formula are then chosen using a scrolling 'palette' of Greek characters and symbols at the top of the *Techwriter* window. As the formula is created, *Techwriter* intelligently positions the caret where the next variable will go – for instance, creating a fraction will mean that the caret moves to the numerator, then the denominator, The formula can be edited by using the cursor keys to step though each individual component.

The basics of *Techwriter* come from *Formulator*, which is widely used in the Apple Mac world, particularly in research and educational establishments. Users include Professor Stephen Hawkins' group at Cambridge University. *Techwriter* and *Easiwriter* documents will be interchangeable, although initially *Easiwriter* will not load *Techwriter* files.

Techwriter will cost around £250 plus VAT will be available later in the year. For more details contact Icon Technology on (0533) 546225.



Techwriter from Icon Technology – impressive formulae creation abilities

A FLOPTICAL ILLUSION?

A STORAGE capacity of 21Mb on a single 3.5in floppy disc drive? Impossible? Not with the new generation of Floptical disc drives.

Floptical is a development of conventional floppy disc technology and uses microscopic optical grooves to ensure accurate tracking of the read/write head. Track densities are increased ten-fold, hence the 21Mb storage.

Add to this the fact that Floptical drives are also compatible with conventional PC-format 1.44Mb quad or high density discs and it is easy to see why a handful of Archimedes peripheral manufacturers have taken a keen interest in the new technology.

Floptical potentially solves the problem of the lack of a high density floppy drive in all Archimedes machines, besides the A5000, which has one. It can also double as a hard disc backup device.

The potential Archimedes market was considered important enough by one of the US manufacturers of Floptical drives, Insite Peripherals, which has been working with Acorn to ensure optimum compatibility. Initial supplies of drives, which require a SCSI interface, could only be used in proprietary 21Mb mode, or HD mode.

According to Morley Electronics' Michael Fodden, Insite has been busy modifying its drives' firmware to accommodate ADFS 800K and 1.6Mb (Risc OS 3/A5000) formats. Fodden would like to sell Floptical drives as replacements to standard 800K drives fitted to existing machines. The drive can be fitted internally to an A5000 without the need to displace either the standard floppy or internal hard drive. Unfortunately, due to a quirk in Risc OS 2, there is a problem when swapping Floptical discs – there is no way to 'dismount' them. However, Risc OS 3 does recognises high capacity, interchangeable media.

Floptical drives are available from Morley, DT Software in Cambridge and The Serial Port in Somerset. Drives cost around £500 depending on fitment. The 21Mb Floptical discs cost around £25 each.

CLASS EFFECT

ORION Computers, the Preston-based Acorn dealer which went into voluntary liquidation in February this year, has been bought by David Atherton. Atherton was a regular contributor to *BBC Acorn User* for many years and co-founded Prestwich-based Dabs Press – which calls itself the 'premier Acorn book publisher' – with ex-*BAU* staff member, Bruce Smith.

Atherton, who was on the list of Orion's creditors, bought the company from the official receivers and saved the company and the jobs of three of its five employees.

The new company is called Class Effect Ltd, trading as Orion Computers. Atherton is apparently not liable for the old company's debts, but he told *BAU* that he is willing to honour guarantees and after-sales support to customers who bought goods from Orion Ltd up until that company's demise in February.

For further information, contact David Atherton at Dabs Press, 22 Warwick Street, Prestwich, Manchester M25 7HN. Tel: 061-773 8632.

NEWS IN BRIEF

● TWO companies, Irlam Instruments and Allied Interactive, have joined forces to develop multimedia products for the Archimedes.

Irlam's acknowledged expertise in imaging products will be matched with Allied Interactive's software support. The first product of the collaboration will Irlam's new Moving i-Image product, which is designed to control various video playback hardware. Contact Irlam Instruments on (0895) 811401.

● SILICON Vision has released new driver software for its Arc-PCB circuit board design packages. The driver enables industry standard Excellon Drill files to be generated for operating drilling machines. Excellon files are widely supported as a standard format in the printed circuit board manufacturing industry. The driver costs £75. Contact Silicon Vision on 081-427 5169.

● A QUIZ game for Archimedes users based on the adventures of the biblical character Elijah has been released by Evangelsoft, specialists in Christian computer games. The Adventure of Elijah Quiz was overall winner of a Bible Software competition at last year's Christian Resources Exhibition. For more information, contact Word Service on 081-949 2733.

● A Risc OS 3 version of Ace Computing's printer driver for the Hewlett-Packard DeskJet 500C, PaintJet and PaintJet XL colour inkjet printers has been released. Resolutions of 75-300 dots per inch are supported and printing is helped by data compression.

The release follows the success of Ace's Risc OS 2 driver, which it says has been selling very well. Like all Ace Computing's drivers, the price is £18.80 including VAT. Contact Ace Computing on (0223) 322559.

● STAR Micronics UK has been confirmed as the top supplier of printers in the UK. Star took a 17.5 percent market share by volume, 1.4 percent ahead of Hewlett-Packard.

The company is best known for dot matrix printers and in this sector it has over a quarter of the existing market.

NEW CD-ROM PACKAGE



Acorn and Cumana's joint CD package

ACORN and Cumana have combined to offer special CD-Rom-based A5000 package costing just £1799 plus VAT.

The system comprises Acorn's latest A5000 computer, a CD-Rom drive and SCSI interface, plus a compendium of seven CD-Rom discs aimed at educational customers.

Software supplied includes the new *Revelation2* painting and image processing package from Longman Logotron. Also included are *Space Encyclopaedia*, *The Hutchinson's Encyclopedia* and *The Times and Sunday Times Sampler* which contains archived newspaper articles from January to June 91. There is also an *Illustrated Shakespeare* and a disc which contains all 60 of Arthur Conan Doyle's Sherlock Holmes' stories, plus *The Illustrated Holy Bible* – which, incidentally, *BAU* comms columnist Paul Vigay helped to port over to the Archimedes.

Further incentives include a £25-off voucher for a year's subscription to the Neris educational resources database on CD-Rom and a £30-off voucher for a year's subscription to *The Times* and *Sunday Times* CD-Rom archives.

For further information, contact Cumana on (0483) 503121.

MORE FROM MINERVA

MINERVA Software has been outlining some new software packages to be released during this summer. Firstly, a completely new version of its *EasiWord* word processor, which will probably be known as *EasiWord 2*, is expected this month. This will replace the existing version of *EasiWord*, which forms part of the Desktop Office business suite. *EasiWord 2* is an entry-level word processor and does not use Risc OS outline fonts. A price for *EasiWord 2* has not yet been set, but its natural competitor is the now-ageing *First Word Plus* package.

Minerva says that the application will appeal to users with nine-pin dot matrix or daisy-wheel printers, which are better or faster at printing characters rather than graphics. Also in the wings is a fully featured word processor which does use Risc OS fonts. This will be called *Prime Word* and will compete with likes of *EasiWriter* from Icon Technology. Minerva have not yet set the price, but say that *Prime Word* should be available in August or September.

Minerva's entry-level Cad package called *CADet* priced £149 will be followed up by a professional version called *ProCAD* to be released in October. *ProCAD* is capable of managing drawing sizes up to A0 and will cost about £500. All the new releases will be demonstrated at our show at the Wembley Conference Centre (October 16 to 18).

For further information, contact Minerva Software on (0392) 437756.

USER PORT ADDITION

IN RESPONSE to customer feedback, mainly from the education sector, Risc Developments has released a revised range of internal IDE hard drives for the A3000 which now incorporate a user port interface at no extra cost. The interface was added mainly because teachers otherwise found they were unable to connect Concept Keyboards to their A3000s while an internal hard drive was fitted.

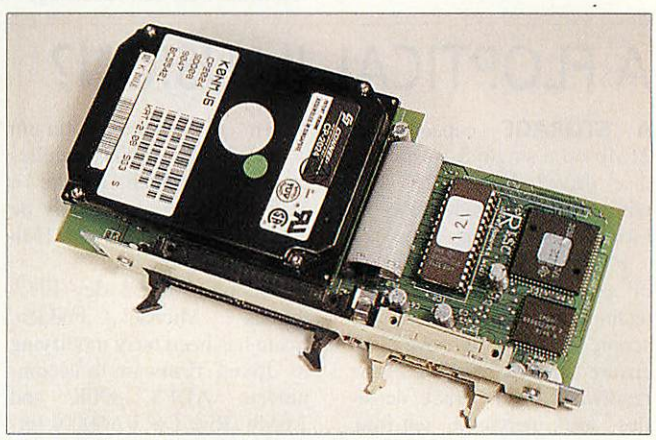
The user port interface is fully compatible with other stand-alone user port cards which are currently available. An optional external power supply unit, priced £17 plus VAT, is available to drive the user port in case certain user port peripherals overload the A3000's own power supply.

The drives themselves are 2.5in devices available in 20Mb (£195 plus VAT) and 40Mb (£359 plus VAT) sizes. An 80Mb version is planned.

● Meanwhile, owners of the venerable A300 series Archimedes, (like our news editor), are currently spoiled for choice when it comes to upgrades to overcome the machine's 1Mb Ram limitation. There must be plenty of the old workhorses out there because Risc Developments has added a 4Mb upgrade for the A305/310. Risc Developments claims its upgrade is the smallest yet and is user-installed in less than half an hour without any soldering.

Two multi-layer circuit boards are supplied and the installation will accommodate Risc OS 3 Rom chips once they become available as upgrades.

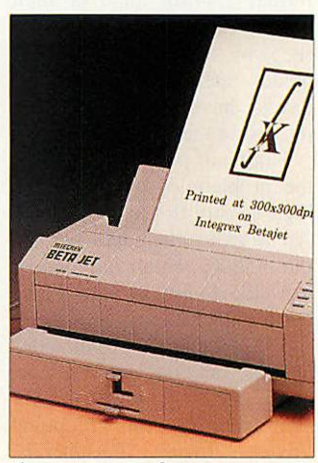
The Ram upgrade is priced £269 plus VAT, including a Memc1a memory controller chip upgrade. For further information contact Risc Developments on (0272) 40303.



Risc Developments' internal hard drive with user port

NEW INTEGREX PRINTER

INTEGREX Systems Ltd, best known for its range of colour printers, has announced the addition of a monochrome 300dpi inkjet which is claimed to be near laser quality. The Betajet is quiet and light, weighing just 2.9kg. The PCL 3 printer language is supported, as are HP Deskjet Plus, Epson FX850 and IBM Proprinter emulations. Another feature is the mess-free ink cartridge replacement and there is a selection of font cards and memory upgrades. It costs £299 plus VAT. Contact Integrex on (0283) 551551.

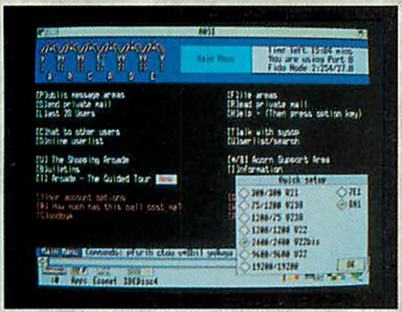


The new BetaJet from Integrex

Hearsay II

The most advanced communications package for Archimedes systems.





Hearsay II is a multi-tasking and fully RISC OS compliant communications package designed for easy communications for the first-time user, but with a wide range of advanced features making it the professionals choice.

It is ideal for use with Prestel, Telecom Gold, Campus 2000 and Compuserve, and also provides very high quality VT320, VT102, VT52 and Tektronix 4105 Colour terminal emulations for direct connection to mini and mainframe hosts.

Only £75

In addition it gives access to Minitel systems such as the Teletel service and provides Xmodem, Ymodem, Zmodem and Kermit file transfer, a comprehensive script language and an auto-dial number directory.

- Fully RISC OS compliant
- Multi-tasking and background transfers
- Scalable terminal windows
- Xmodem, Xmodem1K, Ymodem, Zmodem, Kermit, SEAlink, and ASCII file transfer
- Batch file transfer
- Script language based on a subset of C
- Macro processor and definable keyboard
- Support for RISC OS printer drivers
- Number directory with auto-logon and password protection
- MNP 2 and Vasscom error correction
- Supports most popular modems e.g. Hayes

Upgrade to version II

Upgrade from Hearsay I for only £35 plus VAT plus £3.10 carriage. Please return original disc to address below.

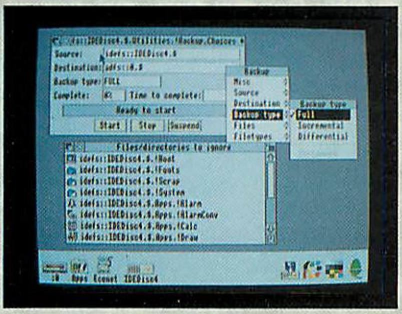
'It does everything we want, and is a pleasure to use.' *ARCHIVE Jan 92*

'Background data transfer, a well documented script language and high RISCOSity make this a powerful contender...' *ARCHIMEDES WORLD April 92*

'...the manual is an excellent example of thoroughness and clarity...Hearsay II is a very good communications package and is thoroughly recommended...' *ACORN USER May 92*

Hard Disc Companion II

Hard disc backup and retrieval



Version II of Hard Disc Companion offers superior performance and efficiency. It has been completely re-written and is now twice as fast and even easier to use.

It provides a structured approach to the backing up of hard drives, and the recovery of files in the event of disc failure or accidental file deletion. Both Full and Incremental backups are supported, and the files to be backed up or ignored may be specified using simple drag operations.

Only £45

The entire backup specification may be saved in a script file for use at a later date. Hard Disc Companion II uses an efficient compression system to backup as much data as possible onto the floppies without increasing the backup time.

Separate applications are included to restore entire backups or just selected files.

Upgrade to version II

Upgrade from Hard Disc Companion I for only £15 plus VAT plus £2 carriage. Please return original disc to address below.

'Good value for money...A nearly foolproof interface...Hard Disc Companion keeps things simple and as fast as possible...' *MICRO USER May 92*

'...it is certainly the best hard disc backup utility that I have ever used.' *ARCHIVE Apr 92*

Colour Printer Drivers

For HP DeskJet 500C and Star colour printers



The **PrinterDJ** printer driver produces near laser quality output from the highly acclaimed Hewlett Packard DeskJet 500C colour printer.

Both release 2 and release 3 drivers are supplied, each supporting 75 x 75, 150 x 150 and 300 x 300 print resolutions in monochrome, grey scale and full colour modes.

Only £15 each

PrinterLC is the approved printer driver for Star colour dot-matrix printers. It is suitable for both 9 and 24-pin printers including: LC24-200, LC-200, XB24-10 and LC-10. PrinterLC is a release 2 driver, supporting print resolutions from 60 x 72 dpi to 360 x 360 dpi depending on the printer model. Also suitable for many Epson and NEC colour printers.

RISC developments

RISC Developments Limited. 117 Hatfield Road, St. Albans, Herts. Al1 4JS. To order, or for more information, call (0727) 40303

All software is suitable for Archimedes, A5000 and A3000 systems with 1Mb RAM and RISC OS 2.00 or 3.00.

Please add VAT to all prices and carriage of £3.10 for Hearsay II and £2 for other products.

All prices are for single users—site licence prices available on request.

TESCO SCHEME: £4.5M-WORTH OF COMPUTERWARE FOR SCHOOLS

OVER £4.5 million-worth of Acorn computerware is expected to be distributed during the next two months to schools throughout the UK, thanks to the recent Tesco 'Computers for Schools' scheme, run in conjunction with Acorn Computers.

Although the scheme finished in-store on May 31, schools who have registered with the scheme have until June 15 to send their vouchers in to the 'Computers for Schools' mailing house.

The scheme attracted over 15,000 schools and was described by Tesco's national marketing manager, Jenny Gilmore, as 'the most successful we have ever run'. So far, over 22 million vouchers have been given to customers, who received one voucher for every £25 they spent in Tesco stores. Vouchers are redeemable against Acorn computers and software listed in a special catalogue.

Tesco reported that it received up to 200 calls per day from schools wanting to be involved with the scheme, which is why the closing date for issuing vouchers in-store was extended by two weeks.

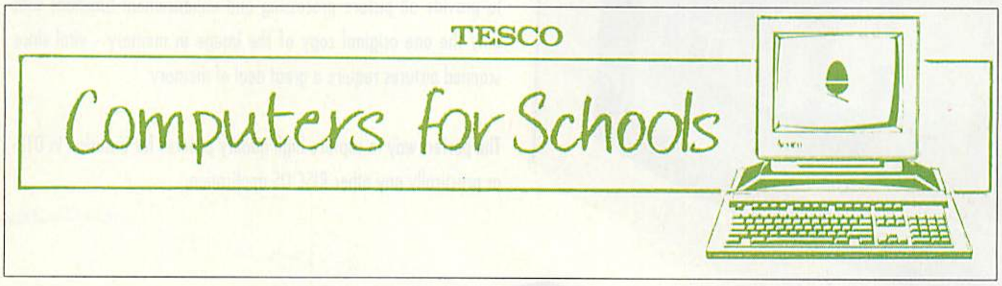
Acorn's marketing director, Mike O'Riordan, said that the scheme had been an enormous success and that the company would be assessing its impact, with a view to discussing whether it might be feasible to run a similar scheme in the future.

● Schools throughout the country have been enlisting the help and support of their communities in collecting vouchers. Firemen and nurses have been collecting vouchers for schools in Essex and Northamptonshire; corporations in Warwickshire have adopted local primary schools for collections; and ambulance staff and police in Avon have also been collecting for local schools.

Many schools set their sights high and tried to obtain at least one BBC A3000 (3000 vouchers). Some even managed to gain enough vouchers for two machines, while other schools pooled their vouchers to buy machines which could be shared.

If your school has been involved with the scheme, why not let us know what initiatives you took to collect vouchers and what you managed to achieve? If you have pictures as well, so much the better. We will publish the best stories in a future issue.

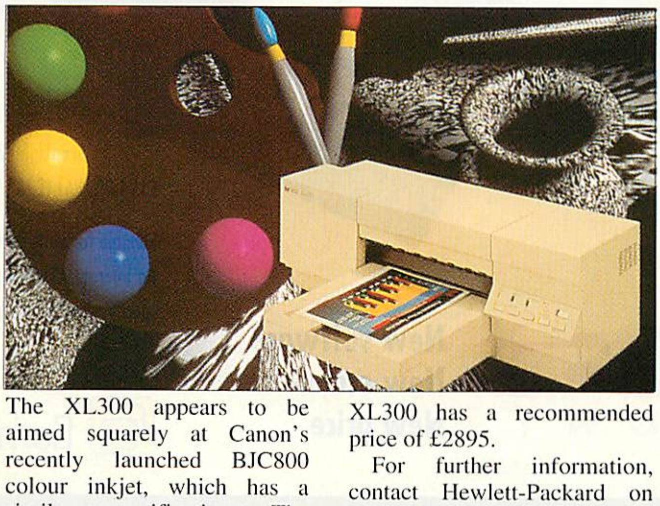
● Meanwhile Acorn's competitor in the education market, Research Machines, apparently sent a letter to schools encouraging them to collect enough vouchers for the Acorn JP150 printer, which is also compatible with RM's Nimbus computers. RM then suggested (rather cheekily) that schools might want to buy a connecting lead from them for £12!



NEW PROFESSIONAL COLOUR OPTION

A NEW, large format colour inkjet printer – the PaintJet XL300 – has been launched by Hewlett-Packard. Aimed to compete with Canon's BJC800 colour inkjet, the XL300 can accept paper sizes up to A3 and is LaserJet III compatible.

Printing at 300dpi (dots per inch) resolution is via four 50-nozzle ink cartridges; one each for cyan, yellow, magenta and black (CYMK). The 24-bit colour compatibility provides selection from a palette of 16.7 million hues and the inclusion of black should ensure print quality is substantially better than with cheaper colour printers.



The XL300 appears to be aimed squarely at Canon's recently launched BJC800 colour inkjet, which has a similar specification. The XL300 has a recommended price of £2895.

For further information, contact Hewlett-Packard on (0344) 369222.

DISTRIBUTION CHANGES?

SPECULATION has been rife in recent weeks concerning the future of two of the three main distributors of Acorn products.

Reports which have appeared in *Computer Trade Weekly* and *The Times Educational Supplement* have suggested that the future of Bonsai Distribution and possibly AB as Acorn official distributors may be in doubt. Bonsai was involved in a takeover of the former Acorn distributor, Kelator, last year.

Although we were unable to obtain official confirmation of the stories from any of the parties involved, it is generally thought that Acorn is intent on stepping up its own direct distribution efforts, thereby cutting out the third- party distributor stage.

There is concern among Acorn dealers that if Bonsai ceases to continue as an official Acorn distributor, it will pull out of the Acorn market altogether. This could mean it will be more difficult for some dealers to stock products from Acorn third-party hardware manufacturers such as Beebug, HCCS, Morley, and so on. This is because, of the three Acorn distributors, only Bonsai offered these products in any quantity in its catalogue.

Dealers we spoke to had mixed feelings about the news. Some rely heavily on centralised buying from Bonsai and AB, as well as from the third official Acorn distributor, Hugh Symons. One dealer we spoke to said he would seriously consider quitting the Acorn market if Bonsai stopped supplying Acorn-related products. On the other hand, Adrian Calcraft of Beebug/Risc Developments said his company had reduced its dependence on selling its hardware upgrades for the Archimedes via Bonsai in recent months and was dealing directly with dealers.

At the time of going to press, Acorn was unable to give us an official comment concerning its plans for direct product distribution, but we hope to have further details in next month's issue.

SCANNING IS BELIEVING

The ScanLight range of scanners has become the most popular for the Archimedes. We now introduce a new updated version of ScanLight 256, a true 256 greyscale hand held scanner, along with new scanner software and a new low price.

The ScanLight, version 2 software, now offers;

- Instant image rotation by any angle
- Support for the new RISC OS 3 true 256 grey-level sprite format
- Only one copy of the image in memory at once
- On the fly screen-dithering for maximum quality
- A selection of sampling sizes from 2x2 to 8x8
- Image enhancement facilities such as sharpening, edge detect etc.
- Simple brightness and contrast controls
- Spline curve control over grey-map for additional control

The scanner itself now offers a maximum resolution of 400 dpi true 256 grey-levels at full 105mm width. In addition there is support for monochrome, 16 grey-level and 256 grey-level scanning at 100, 200, 300 and 400 dpi. The ScanLight software offers several unique facilities that make it the leader in its field - e.g. the ability to provide all picture processing and enhancement functions with only the one original copy of the image in memory - vital since scanned pictures require a great deal of memory.

The perfect way to capture high quality pictures for inclusion in DTP or practically any other RISC OS application.





ScanLight 256, scanner, interface board and software- £199.00+VAT (£233.92 inc.)

Suitable for all Archimedes models and Operating System versions. An internal A3000 version is available for the same price. Please specify when ordering.

256 SCANLIGHT

- **New software**
- **New scanner**
- **New price**

Computer Concepts Ltd

GADDESDEN PLACE HEMEL HEMPSTEAD HERTS HP2 6EX TEL: 0442 63933 FAX: 0442 231632

WORKS OF ARC IN COMPUTER ARTIST'S EXHIBITION

FROM the first time a caveman saw fit to decorate his cave walls with pictures and designs, the question 'What is art?' has been the favoured topic of many a conversation.

When photography tried to establish itself as an art-form, it suffered much criticism from 'traditional artists'. Computer art appears to be receiving the same treatment, although there are a number of exponents striving to prove them wrong.

One such artist is Pete Worrall, a fine-arts graduate who is using the medium of the Archimedes computer screen to convey his ideas. Designs are produced using the *Arcol* paint package, then a photograph is made of the screen and blown up for framing.

An exhibition of Pete's work, titled Electric 5¾, will be on show between 23rd May to 27th June 1992 at the Wednesbury Art Gallery in Wednesbury, West Midlands. For more details, contact the gallery on 021-556 0683.



Holy man, just one of the stunning works of art seen in Pete's exhibition

CHECK IT OUT IN THE PICTURE BAY

THIS MONTH sees the start of a new series of hints and tips to help you to get the most from art and design packages for Acorn machines.

Anyone who has a problem with their pixels can drop a line to Picture Bay and we promise that we will do our best to help. On the other hand, if you have the answer to someone else's question, we would be happy to publish the solution.

To start off, we'll take a look at flood-filling; a tool that is sometimes confusing to use. A flood fill is simply a method of colouring in an area bounded by lines of a different colour. They are not usually limited to a single colour, but will allow patterns to be used as well. Most art packages come with a number of predefined designs.

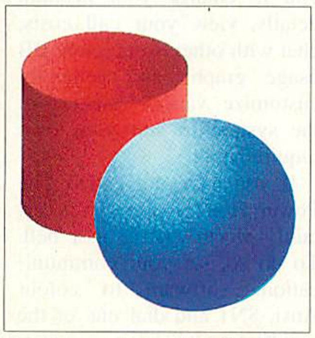
Rather than the painstaking process of drawing a wall by hand, why not design a brick pattern and use this to fill the area? This leads us on to a few hints and tips for designing fill patterns.

- Make sure that a pattern will look right when repeated over a large area. It's easy to produce designs with horizontal and vertical lines, but diagonals can be quite tricky.
- Using patterns, it is possible to create 'new' colours by dithering existing ones. Dithering is the alternate placing of pixels in a chess-board arrangement. The higher the resolution you use, the more colours will appear to blend, so it's possible to create a large number of shades in a high-res 16 colour mode.
- Some art packages will allow transparent pixels to be used in pattern designs. This lets you colour over areas while effectively being able to see the picture behind.

In addition to straight forward colours and patterns, some programs allow graded fills for areas. Most provide a selection of grades that can be used. Colouring an area from a dark to a light shade is an easy way of adding depth to a picture and the picture on the left shows the kind of effects that can be achieved.

- The final type of fill is the circular graded-fill. This floods an area outwards from a central point. It is best used for highlights, which can be created by choosing a scale of colours from the main colour to a brighter version.

Rob Miller



Shading can be used for 3D effects

DOOK IT

BAU reader, Martin Chapman, has written in with a query about Risc OS 3 *Draw*. Martin finds that his latest pictures cause problems with some of his old software.

The reason that pre-Risc OS 3 programs are unable to handle the new *Draw* files is the presence of an extra object, used to describe current zoom, grid settings and so on.

In the case of 4Mations *Poster*, the extra 'object' will be loaded into a document at the bottom left hand corner of the page. Its presence becomes apparent if you group all objects together. The box enclosing the group extends to the bottom left hand corner although there is nothing there. Creating borders in *Poster* will also cause similar problems.

One solution is to use the *Dook* (Draw Options Object Killer) to remove the unwanted object. This public domain utility is provided on the July subscribers' disc.

KEEPING THOSE BILLS AT BAY

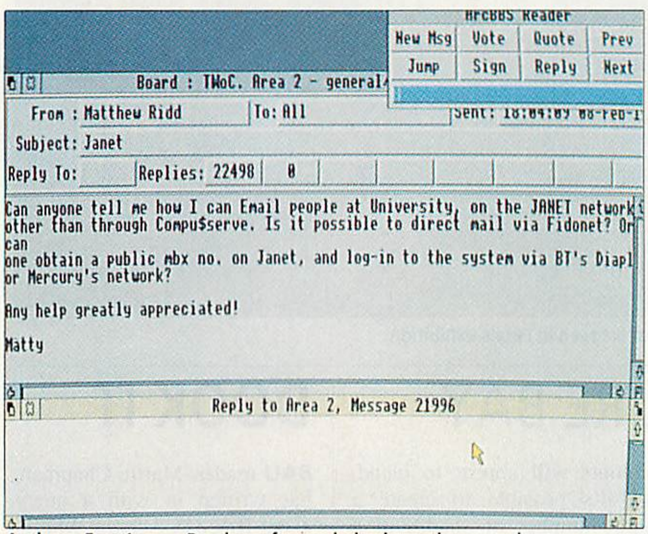
ARE YOU sometimes shocked by the size of your telephone bill when it drops through the letterbox? Do you worry about the time spent reading messages, when you log on to distant bulletin boards?

Anthony Frost has come up with the answer in the form of *Reader*, an offline message reader. This proves an effective way to cut down on the time spent reading long messages while online.

However, *Reader* offers far more than just a simple reading facility. It can also organise messages from different bulletin boards, reply to messages using its in-built editor and save all replies to a single file, before posting them back to the bulletin board next time you log on.

Reader works fully within the Risc OS environment, which means that you can simply drag an archived message file on to its icon. If *Sparkplug* is loaded at the same time, it can then de-compress the file and store all the messages in its own database.

It also sets up what is known as a thread. A thread is a set of linked messages sent as replies to previous messages. By using this option, you can see if a particular message was in fact a reply to an earlier message. *Reader* will automatically route all replies together so that you can reference these to previous messages.



Anthony Frost's new Reader software helps keep the costs down

To send a reply to the message you are reading, just click on reply, type your reply and click on store. You can even quote lines from the original message. Anthony has also written a short utility program that allows you to place a random signature at the bottom of your reply.

Reader is invaluable as a way to keep archives of all messages sent to your regular bulletin boards. Moving through the messages is simply a case of dragging a mouse pointer through the file or clicking on backwards and forwards icons. *Reader* is a shareware product and a donation of £10 is recommended, which will be donated to charity. This represents excellent value, especially when you take your reduced telephone costs into account.

To place an order, you can contact Anthony either via The World of Cryton BBS (user number 332) or via Arcade BBS (user number 75).

ALL CHANGE AT THE POWER HOUSE

A YEAR ago, I mentioned The Power House in this column. Since then the sysop, Edward Hobson, has certainly been busy and TPH has expanded beyond all recognition.

One important change, that will make a difference to accessing times, is that there is now a second line on (0829) 782667 which supports 300, 1200, 2400, MNP and 1200/75. The original Power House number (0829) 782676 now supports all speeds (except 1200/75) up to 14400 HST and includes v42bis.

Edward runs the BB on his IBM PS/2 model 80 armed with a 405Mb hard disc, but he has extensive coverage for Archimedes users including the Acorn Support database run via the Fido network.

He also has a much extended entertainment menu, containing numerous online games. It even includes Ansi music, which supposedly plays music via Ansi control codes. Unfortunately my comms software does not support this novel feature, so I could not sample the potential delights of online music.

However, another feature is the ability to play a selection of online games including drag racing where you must race a car against the computer or even another online user.

One area that has grown enormously is the file area. I can imagine that a substantial amount of Edward's 405Mb Winchester drive is occupied by Archimedes downloads in the form of desktop utilities, demos plus various sound and graphic programs.

Another vastly expanded area is the utility area to enable you to change your account details, view your call costs, chat with other users, view BB usage graphs and generally customize various aspects of the system to suit your own requirements.

If you have not called The Power House before, it's certainly worth giving it a bell. To do so, set your communications software to colour Ansi, 8N1 and dial one of the numbers given above.

IN BRIEF

● The annual Networks 92 exhibition will be held at the NEC, Birmingham on 23rd – 25th June 92. Not only will leading network and modem suppliers be showing off new equipment, but visitors be able to attend free seminars and workshops throughout the three day event. Full details and advance tickets can be obtained from Blenheim Online, Blenheim House, 630 Chiswick High Road, London W4 5BG, tel: 081-742 2828.

● Dowty have just announced a new 'quinn' modem. The Quantum96 modem retails at £595 plus VAT and boasts a range of impressive features from a reasonably thin black box. The Quantum96 copes with all speeds and includes V42bis error correction. Dowty claim that this can boost the data throughput to four times the transmission rate.

A 'phase 2' model will be available within the next month, which has V32bis operation. Both machines will be compatible with group III fax machines. For more information, call Dowty Information Systems, tel: (0635) 33009

● Have you ever damaged, or blown, your modem mains adapter? Well, now help is at hand in the form of Manby Park Electronics of Lincolnshire.

MPE sell a whole range of new mains adapters from only £1.50 each. Their extensive range is detailed in the latest catalogue. Contact MPE on (0507) 328031.

● Another new modem has just been launched by Tricom. The price is currently unavailable but the list of features is certainly enviable, so expect a large dent in the bank account.

The Tornado 14/42 incorporates V32bis, v32, v22bis, v22, v23 and v21 and can have an average throughput of 30k bps. It is certainly interesting to see that the split v23 baud rate is still catered for, although little used except on some Viewdata BBS's.

Some extra features not usually found on modems are included such as password protected remote access and historic call statistics. Tricom can be contacted on (0494) 483951.





"For this money you can afford to take a gamble - especially when the odds are so heavily in your favour."

"This is about as good as you're likely to get on the Archimedes."

MALCOLM BROWN, BBC ACORN USER JUNE ISSUE 1992



The £49 Vision Digitiser from HCCS, probably one of the most cost effective ways to get real life images into your DTP system with excellent quality! The Vision Digitiser takes a standard PAL Video signal produced by CamCorders, Video Cassette Recorders, some TV's and Canon Ion cameras. The source does not require a good still frame because the Vision Digitiser grabs frames in real time. With the £30 Colour upgrade available from the end of June with a £5 discount to existing users how can you justify not buying one. If you want to see one before you buy, ask your local Acorn dealer.

VISION digitiser

K9200 A3000 Internal Vision	£49
K9202 A3000 External Vision	£62
K9204 Archimedes Vision (A300, A400, A540, R140, R260 & A5000)	£49

HCCS

HCCS ASSOCIATES LIMITED, 575-583 DURHAM ROAD, LOW FELL, GATESHEAD, TYNE AND WEAR. NE9 5JJ.
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CUT HERE

PLEASE SEND ME ☐ VISION DIGITISERS MODEL ☐ BY RECORDED DELIVERY

ADDRESS: ____________________

£49 + VAT = £57.58 (Carriage is FREE)
£62 + VAT = £72.85 (Carriage is FREE)

VISA or ACCESS WELCOME

EXPIRY DATE ☐☐ / ☐☐

NAME: ____________________

POST CODE ____________________

THE COMPLETE DTP SYSTEM

Enter our tenth anniversary competition and win an Archimedes A5000-based desktop publishing system worth nearly £4000!

It's ten years since the first issue of *Acorn User* appeared. To celebrate our tenth anniversary, we are offering readers the chance to win a complete desktop publishing system, which we have put together in conjunction with Acorn and Computer Concepts.

This top-class DTP system combines some of the best technology available in the world of desktop publishing, including:

- An Acorn Archimedes A5000 computer with colour multiscan monitor.
- A LaserDirect HiRes4 high-resolution laser printer.
- A Scan-Light Professional flat bed image scanner.
- *Impression 2* desktop publishing software.
- *Artworks* art and graphics software.

Using the high-specification A5000 computer and multiscan colour monitor, documents – such as company reports, newsletters, and so on – can be created quickly and easily using Computer Concepts' *Impression 2* desktop publishing software.

Graphics can be created using CC's *Artworks* and images can be scanned and imported into your documents using the company's Scan-Light Professional scanner. They can then be printed out on a high-resolution LaserDirect printer, CC's version of the Canon LBP4 laser printer.

This combination of hardware and software is not currently sold as a package although, if you wanted to buy



the items separately, the total cost would be just under £4000. An equivalent Apple Macintosh or IBM-PC DTP system could cost you at least twice that amount. But one lucky *BBC Acorn User* reader can win this superb Acorn system simply by entering our competition!

Also in celebration of our tenth birthday issue, we are giving away ten one-year subscriptions to *BBC Acorn User*, which include our free monthly discs packed with useful programs and utilities.

HOW TO ENTER

To enter the competition draw that will decide the winner of the DTP system, all you have to do is complete the reader questionnaire on pages 21 and 22 and include an idea for what you think might be a useful feature for our readers.

Apart from giving you the chance to win the DTP system, your answers will give us the information we need to provide you with an even better magazine. We want you to tell us about the features you like or dislike and what sort of things you would like to see more, or less, of. We would also like to find out more about you and your computing environment.

All completed questionnaires will be held in the strictest confidence and will only be used internally for planning future editorial.

To stand a chance of winning the DTP system, you should include your name and address and give us your suggestion for a feature which might be included in *BBC Acorn User*.

The closing date for receipt of the questionnaire is Monday July 27th 1992. The winner will be presented with the prize at the *BBC Acorn User* Show (Wembley Exhibition Centre, October 16-18).

Please return the questionnaire to: BBC Acorn User Reader Survey, Redwood Publishing, 20-26 Brunswick Place London N1 6DJ. (You may return a photocopied version if you wish). Only one entry per person please. The Editor's decision will be final. Usual competition rules apply.

Good luck!

THE COMPLETE DTP SET-UP

Acorn A5000 with multiscan monitor

The A5000 lies at the heart of our DTP system. It includes the Risc OS 3 operating system, a fast Arm3 processor, a standard 2Mb of memory and 40Mb hard disc. From the outside, the A5000 looks like a PC, but there the similarities end. When it comes to using the A5000, Risc OS applications are often more innovative and powerful, making use of the A5000's excellent graphics capabilities. As a DTP platform, the A5000 would be difficult to match in either price or specification.



LaserDirect HiRes 4

The LaserDirect HiRes 4 is the most popular in Computer Concepts' LaserDirect range of printers. It is built around the Canon LBP4 laser printer, offering four pages per minute at 300 or 600 dpi quality. The printer driver includes several unique features, such as a system for rendering outline fonts twice as fast as any other printer. It also 128 grey-levels, a choice of halftone screens, background printing,



and it can be used with other types of computers, such as PC compatibles.

ScanLight Professional

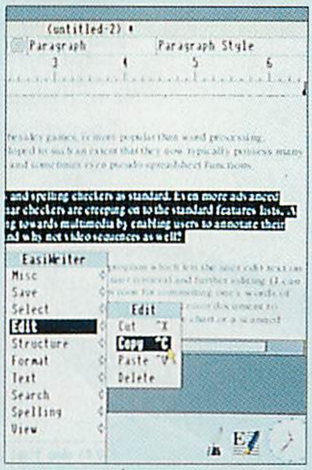
This top-of-the-range ScanLight model from Computer Concepts is



a high-quality, A4 flatbed scanner which can scan at up to 300dpi and 256 grey-levels. This produces scanned images of a quality suitable for typesetting. The ScanLight Professional has a SCSI interface and can be connected with an extended version of CC's ScanLight Plus software, which provides a wide range of manipulation options to enhance the scanned image, including fill control of the grey-map and edge sharpening routines.

Impression 2

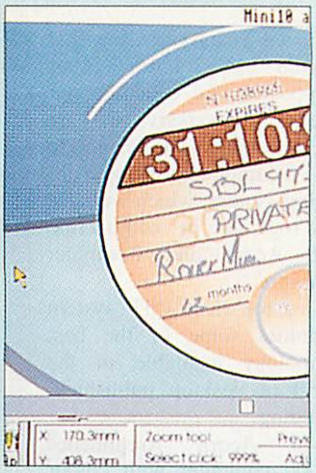
Impression has become one of the most popular software packages in the Archimedes market, with over 15,000 copies sold so far. Produced



by Computer Concepts, it is an effective word and document processing package which can be used to produce any documents ranging from newsletters to professional quality magazines (BBC Acorn User's editorial pages are produced using it). *Impression 2* has received favourable reviews from leading magazines outside the Acorn marketplace, and has been compared favourably with some of the best DTP packages in the Apple Macintosh and IBM PC environments.

ArtWorks

Computer Concepts's new graphics illustration package, *Artworks*, has been designed along the lines of *Adobe Illustrator* for the Apple Macintosh or *CorelDraw* for IBM



PCs. Key features include: super-fast editing and screen re-draw; comprehensive toolbox; 24-bit colour control using RGB, CMYK and HSV colour models; full process and spot colour control; linear and radial graduated fills; image distortion to an envelope; 3D perspective; infinite undo-previous step; rotated and graduated-filled text which remains editable on the page; display drawing as outlines or solid; layers; printer tiling; and full anti-aliasing of drawings.

Further information

If you want to find out more about desktop publishing, there are a couple of features in this issue which may be of interest.

For those who are experienced *Impression* users, our feature on page 26 will show you how to send your *Impression* documents to a professional printing bureau.

And, at the other end of the scale, if it is training that you are interested in, turn to page 31 for details of a training course which is suitable for newcomers to desktop publishing.

BBC ACORN USER

READER SURVEY

ABOUT YOU

1 Are you:
01❑ Male? (10)
02❑ Female?

2 What is your age group?
01❑ Under 16 (11)
02❑ 16-24
03❑ 25-34
04❑ 35-44
05❑ 45-54
06❑ 55 or more

3 What is your occupation?
01❑ Student at school (12)
02❑ Student at college/university
03❑ Teacher/lecturer
04❑ Research and development
05❑ Self-employed small business
06❑ Health/welfare
07❑ Media/creative
08❑ Computing/electronics
09❑ Engineering
10❑ Other professional
11❑ Managerial
12❑ Admin/clerical
13❑ Manual/tradesman
14❑ Uniformed services
15❑ Unemployed
16❑ Other (please specify)
....
....

ABOUT YOUR COMPUTING

4 What micro(s) do you own or use regularly?

At home	At work	
01❑	02❑ BBC Model B	(13)
01❑	02❑ Electron	(14)
01❑	02❑ Master128/Compact	(15)
01❑	02❑ Archimedes A5000	(16)
01❑	02❑ Archimedes 300 series	(17)
01❑	02❑ Archimedes 400 series	(18)
01❑	02❑ BBC A3000	(19)
01❑	02❑ Archimedes A540	(20)
01❑	02❑ Other	(21)

....
....

5 Which of the following do you own or intend to buy in the next 12 months?

Own	Intend to buy	
01❑	02❑ Disc drive	(22)
01❑	02❑ Hard disc	(23)
01❑	02❑ Dot matrix printer	(24)
01❑	02❑ Laser printer	(25)
01❑	02❑ Normal monitor	(26)
01❑	02❑ Multisync monitor	(27)
01❑	02❑ Mouse	(28)
01❑	02❑ Memory upgrade	(29)
01❑	02❑ Arm 3 board	(30)
01❑	02❑ Modem	(31)
01❑	02❑ Midi music equip.	(32)
01❑	02❑ PC Emulation board	(33)
01❑	02❑ Other (please specify)	(34)

....

6 What do you mainly use your micro for? (You may tick more than one box)
01❑ Programming (35)
02❑ Learning about computers
03❑ Computer games
04❑ School or college work
05❑ Teaching own children
06❑ Teaching at school or college
07❑ Home or personal affairs
08❑ Business
09❑ Club or society administration
10❑ Office work at home

7 What are the main applications you use your micro for? (You may tick more than one box)
01❑ Accounting (36)
02❑ Adventure games
03❑ Arcade games
04❑ Computer aided design (CAD)
05❑ Communications
06❑ Databases
07❑ Desktop publishing
08❑ Control/monitoring
09❑ Graphics/art/design
10❑ Home education
11❑ Music
12❑ Research
13❑ Spreadsheets
14❑ Teaching
15❑ Your own programming
16❑ Word processing
17❑ Other (please specify) (37-38)
....

8 What disc system do you use? (Please tick as many as applicable)
01❑ 5.25in 40 track (39)
02❑ 5.25in 80 track
03❑ 3.5in (Master)
04❑ 3.5in (BBC A3000/Archimedes)

9 Where do you usually make your hardware and software purchases?
01❑ High Street store (40)
02❑ Mail order
03❑ Official Acorn dealer
04❑ Other (please specify) (41-42)
....
....

10 Please estimate your personal software spending over the last/next 12 months

Last year	Next year	
01❑	02❑ Less than £20	(43)
01❑	02❑ £20-£49	(44)
01❑	02❑ £50-£99	(45)
01❑	02❑ £100-£299	(46)
01❑	02❑ £300-£499	(47)
01❑	02❑ Over £500	(48)

11 Please estimate your personal hardware spending over the last/next 12 months

Last year	Next year	
01❑	02❑ £20-£49	(49)
01❑	02❑ £50-£99	(50)
01❑	02❑ £100-£299	(51)
01❑	02❑ £300-£499	(52)
01❑	02❑ £500-£1000	(53)
01❑	02❑ £1000-plus	(54)

12 Have you bought mail-order products from advertisements in BBC Acorn User?
01❑ Never (55)
02❑ Occasionally
03❑ Often

13 Is your A3000/Archimedes computer part of a network?

01❑ With other A3000s/Archimedes (56)
02❑ With other BBC micros
03❑ With other micros (PCs, etc)
04❑ Not networked

14 Are you responsible for managing a network?

01❑ Yes (57)
02❑ No

15 Do you have responsibility for specifying/purchasing the following at your workplace?

01❑ Computers (58)
02❑ Software
03❑ Peripherals

ABOUT BBC ACORN USER

16 How do you usually obtain your copy of BBC Acorn User?

01❑ By subscription (59)
02❑ Regular newsagent's order
03❑ Buy it every month
04❑ Buy it regularly
05❑ Read someone else's copy

17 How long have you been reading BBC Acorn User?

01❑ Less than three months (60)
02❑ 3-6 months
03❑ 7-12 months
04❑ More than one year
05❑ More than two years
06❑ Since before 1984

18 Would you like to see more, or less, coverage of the following (please tick appropriate box in each case)

	More	Less	About right	
News	01❑	02❑	03❑	(61)
Education	01❑	02❑	03❑	(62)
Graphics	01❑	02❑	03❑	(63)
Communications	01❑	02❑	03❑	(64)
*INFO	01❑	02❑	03❑	(65)
Questions & Answers	01❑	02❑	03❑	(66)
Readers' Letters	01❑	02❑	03❑	(67)
Features for beginners	01❑	02❑	03❑	(68)
Programming	01❑	02❑	03❑	(69)
Technical advice	01❑	02❑	03❑	(70)
Networking	01❑	02❑	03❑	(71)
Individual software reviews	01❑	02❑	03❑	(72)
Software comparison reviews	01❑	02❑	03❑	(73)
Hardware reviews	01❑	02❑	03❑	(74)
Hardware comparison reviews	01❑	02❑	03❑	(75)
Games	01❑	02❑	03❑	(76)
Competitions	01❑	02❑	03❑	(77)
Yellow pages program listings	01❑	02❑	03❑	(78)
Puzzle page	01❑	02❑	03❑	(79)

19 Overall, how do you rate BBC Acorn User's technical content?

01❑ Too technical (80)
02❑ Not technical enough
02❑ About right

20 Would you like to see Acorn-related products compared with those from IBM PC or Apple Macintosh environments?

01❑ Regularly (81)
02❑ Sometimes
03❑ Never

21 Which of the following do you buy regularly (at least one out of two issues) or subscribe to? (You may tick more than one box)

Buy	Subscribe to	
01❑	02❑ BBC Acorn User	(82)
01❑	02❑ Micro User	(83)
01❑	02❑ Archimedes World	(84)
01❑	02❑ Beebug	(85)
01❑	02❑ Risc User	(86)
01❑	02❑ Archive	(87)
01❑	02❑ Educational Computing	(88)
01❑	02❑ Personal Computer World	(89)
01❑	02❑ Computer Shopper	(90)
01❑	02❑ Other (please specify)	(91)

....

22 How often do you type in the programs listed on the yellow pages?

01❑ Regularly (92)
02❑ Sometimes
03❑ Never

23 Would like to see software product listings?

01❑ Yes (93)
02❑ No

24 Would you like to see hardware product listings?

01❑ Yes (94)
02❑ No

25 If a disc full of programs was attached to the magazine, how much more would you be prepared to pay for it?

01❑ 75p (95)
02❑ £1
03❑ £1.50p
03❑ No more

26 Which disc size would you prefer to receive with the magazine?

01❑ 5.25in (96)
02❑ 3.5in

27 Do you own or use any Computer Concepts' products?

01❑ Yes (97)
02❑ No

Finally, to enter the draw to win the complete DTP system, please give us your idea for a feature for BBC Acorn User.

....
....
....
....
....
....
....
....
....
....

When you have completed this questionnaire, please send it to: BBC Acorn User Reader Survey, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. Entries should arrive no later than July 27 1992.

Your name...

Address...

....

....Postcode.............................

PRODUCED by The Fourth Dimension .... THE Acorn Games Specialists

Saloon Cars DELUXE





The Improved Driving "Game-ulation"!



UPGRADE for ½ PRICE Only £17.50

This new improved DELUXE version of *Saloon Cars* includes many new features suitable for upgraded machines and A5000s, plus many new features suitable for all machines......

REAR-VIEW MIRROR

Improved rear-view mirror.
Improved improved rear-view mirror suitable for Arm3 users.

COMPATIBILITY

Compatible with Course disc to be released soon (see below).
Compatible with Formula 1 upgrade to be released in response to demand for a decent Formula 1 simulation on the Archimedes (hopefully late 1992).
Compatible with Saved Players from ***Saloon Cars v1.0***.

GRAPHICS

New car graphics, featuring the most sophisticated vector graphics ever seen in a home computer game, allowing full 3D rotations of cars - other cars can actually spin off the track in front of you.
More realistic crashes, allowing other cars to have smash-ups almost as spectacular as your own (2MByte only).
Gameplay has been enhanced immeasurably by the addition of a completely new loading screen.

COURSES

New practice course (Test Track), easier (less hard) to stagger round than the old one.
Even more detailed and realistic features on most courses.
Detailed and Fast modes on some courses to allow use of the full potential of the Arm3 without compromising Arm2 users.

BORING TECHNICAL JARGON

Can be installed onto and run from Hard Disc.
Features minor refinements to the more anomalous features of the original ***Saloon Cars v1.0***. (Most of the bugs have been fixed!).
Unique integration process allowing speed variations in processing to maintain the highest possible frame rate at all times whilst maintaining perfect real time simulation of the race. (The game doesn't slow down when the graphics do!).
Special mode for machines with more memory which uses the extra capacity to enhance the speed and complexity of the graphics.

AND FINALLY

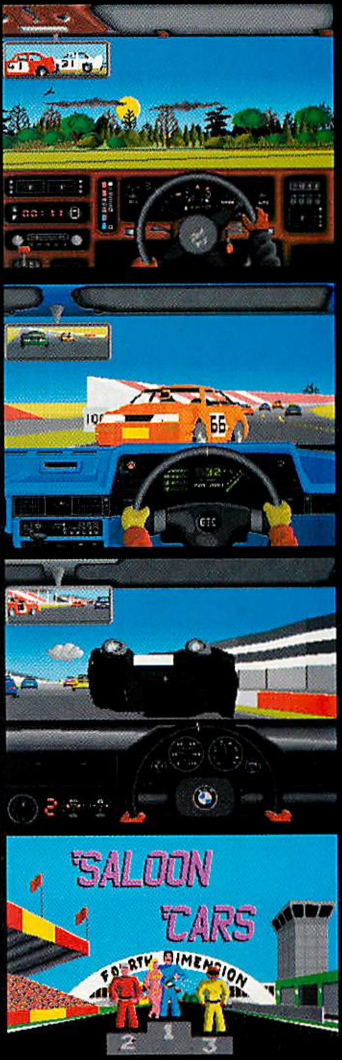
Many more features which we want to be a surprise.
Probably a few more features we haven't even thought of yet, and....a few we didn't think up at all.

OLD FEATURES

Saloon Cars DELUXE still...
does not provide a realistic simulation of a full time office job,
does not make the coffee,
and it still isn't quite as good as actually going out for a drive in a Sierra Cosworth.

OLD REVIEWS OF *SALOON CARS v1.0*

"*Saloon Cars* is the definitive racing game. It is pure, unadulterated fun." ***Archimedes World '91.***
"Make no mistake: the speed and smoothness of this game has to be seen to be believed." ***Syracuse '91.***
"...you cannot help but be astounded at the gameplay." ***Club A3000 '91.***

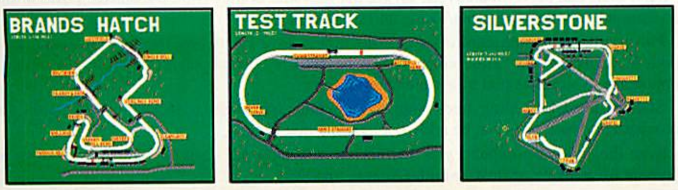


Acorn A3000, A5000 & Archimedes Price £34.95

To upgrade simply return the whole original *Saloon Cars* directly to us plus payment. We'll send you the newly packaged / enhanced 3 disc DELUXE version on release.

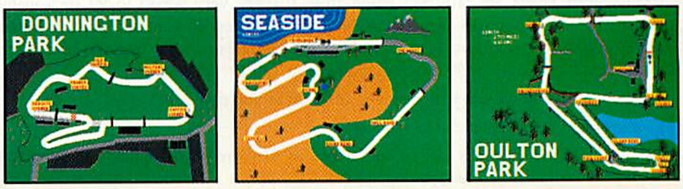
SALOON CARS DELUXE COURSES

The new *DELUXE* version still contains the 2 real courses, Silverstone and Brands Hatch, plus a newly designed wide practice course called Test Track ideal for beginners.



SALOON CARS EXTRA COURSES

This new Course disc contains 3 superb new courses which are only compatible with the new *DELUXE* version. They cost £19.95 and will be released hopefully in late June '92.



PRODUCED by The Fourth Dimension .... THE Acorn Games Specialists

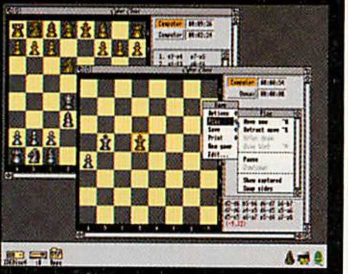
Cyber Chess





"The Definitive Chess-Playing Program"









Chess is probably the most popular game in human history. It has survived for fourteen centuries and is as successful today as ever. Thousands of people have dedicated their lives to its study and over ten thousand books have been published on its theory.

Now the Fourth Dimension is bringing the full magic of the game to Archimedes owners with its latest product, *Cyber Chess.* This represents one of the highest specification chess-playing programs available for ***any*** micro-computer. Over three sides of A4 paper is needed just to name the features present in the program. Some of its main points are:

SUPERB 3D SIMULATION

- A near complete 3D simulation of the game. Animation is used to move the pieces smoothly around the board; pieces are picked up and dragged by the human player to their new squares.
- Designed for total clarity. The board is carefully arranged so it can be played from without difficulty. A large alternative 2D view is also provided as an option.
- High-quality digitized stereo sound and speech.

RISC OS COMPLIANT

- Runs from the desktop in a window; fully multi-tasking and intuitive; follows the 3D style associated with high quality software.
- Multi-windowed. Any number of games can be opened and running from one incarnation of the program (within available memory). A sophisticated internal scheduling algorithm allows *Cyber Chess* to drive all computer opponents/games simultaneously whilst still smoothly multi-tasking with other desktop applications.

FIDE RULES

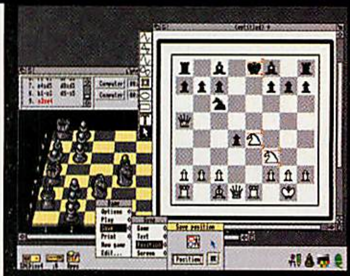
- Full implementation of all applicable chess laws, including en passant captures, underpromotions, 50/75 move rule etc. Even resignation and draw by agreement are supported.

HIGH SPEC MACHINES

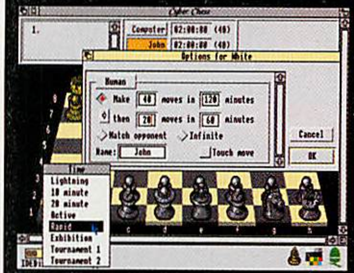
- Optimised for an ARM2, mode 12 system. But takes full advantage of a faster processor or even extra RAM to produce a higher 'full strength' playing standard and smoother animation.
- Thoroughly tested with RISC OS 3; supports saving of the desktop.

BACKGROUND

- The publisher, The Fourth Dimension, is the premiere specialist games house for the Archimedes with a string of classics dating back several years. *Cyber Chess* represents the latest in superb 3D simulations following on from great best-selling successes such as ***Chocks Away, Saloon Cars*** and ***Break 147 & Superpool.***
- The author, William Tunstall-Pedoe, has been developing commercial software for Acorn machines for nearly ten years including several high-quality Archimedes products. He has a First Class Honours degree in Computer Science from Cambridge University and spent over a year studying computer chess research in order to produce *Cyber Chess*. This project is by far his most substantial yet and was designed from the beginning to be the definitive chess-playing program for RISC OS machines.









Acorn A3000, A5000 & Archimedes Price £49.95

Please ring for details regarding Site Licences

The Fourth Dimension, 1 Percy Street, Sheffield, S3 8AU Tel. (0742) 700661 or 769950

SUPPORT FOR BEGINNERS/CHILDREN

- You can learn chess from scratch using *Cyber Chess* with the tutorial supplied.
- 100 beginner levels are provided going from 0 (very very weak) to 99 (reasonably competent). This encourages beginners/school chess players to continue playing by not demoralising them and allows them to monitor their progress as they begin to beat higher levels. When they beat level 99 they can graduate to 'full strength' mode.
- Teaching option shows you which moves are legal as you play.
- If a player gets stuck a hint can be requested.
- The names of the openings can be announced as they are played quickly familiarising chess learners with the various opening systems.

SUPPORT FOR STRONGER PLAYERS

- State-of-the-art chess algorithm.
- *Cyber Chess* can perform analysis, giving the best line of play from the current position and an estimate of who is winning/losing and by how much.
- Full tournament time controls (e.g. "40 moves in 2 hours and then all remaining in 1 hour") can be set up. Time controls can be set for human players as well as computer opponents to simulate real tournament conditions.
- State-of-the-art opening book supports opening traps and advice. Multiple books are provided and new ones can be added or existing ones edited.
- Even the style of computer play (defensive, attacking etc.) can be adjusted to taste or to prepare for a match against a similar human opponent.

INTO PRINT

Impression can create DTP pages to a professional standard. But how do you get it from the screen to the printing press? Graham Bell shares some techniques

If you want more than about fifty copies of your document then printing it on even the fastest laser printer isn't the way to go. Many 'instant print' companies will duplicate or print your document, faster and cheaper than you could manage yourself.

Last month we looked at a number of techniques for preparing more professional documents: this month we'll complete the process with details of how to prepare your documents for a professional printer. Plus there's some more handy *Impression* hints, including a reliable way of producing dotted lines.

Most printers can work from camera-ready copy (CRC) and the best quality CRC is output on to bromide – a print of your document on photographic paper. Alternatively, printing plates can be made directly from film. A machine called an imagesetter is used to create both bromide and film: it works like a laser printer, but the laser beam writes directly on the photographic stock rather than using a drum and toner. Because of this, imagesetters work at far higher resolutions that laser printers – at least 1200dpi and often up to 2400dpi.

Modern imagesetters are usually Postscript-capable. So in principle, they are no more difficult to use than a laser printer. But there are three areas where they differ from garden-variety Postscript printers: the resolution is different, the paper or film size is different, and they usually have many more typefaces 'on-line'. The final problem is one of transferring your Postscript document to the imagesetter, since it isn't connected to your Archimedes like your printer. Companies which provide imagesetting services are known as bureaus.

STEP ONE: SENDING TO THE BUREAU

If your document goes on A4, and is limited to the standard Acorn outline fonts (Trinity, Homerton, Corpus, NewHall, Selwyn or Sidney) and any graphics stick strictly to black and white with no greys, then no special action is needed. All you have to do is create a Postscript version of your *Impression* document, put it on a disc and sent that to the bureau. In fact, this applies to any DTP document under Risc OS 2, not just *Impression*. If you have Risc OS 3, then the process is quite different and this will be covered in a separate article.

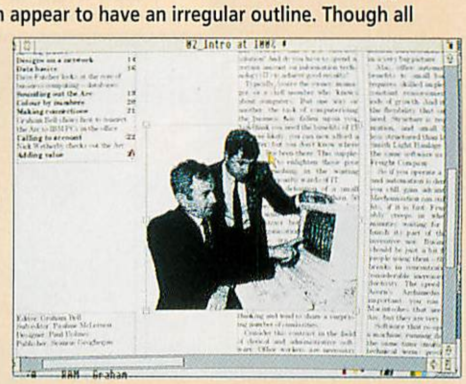
The first step is to check your document carefully. Print it out and read every word. This is your last chance to correct anything. Next load up the *PrinterPS* printer driver. Using the icon bar menu, set it to print to a file instead of the parallel or serial port: you need to type a filename into the menu box. Once it's set, print your document. This creates a file of type Postscript on your disc as shown in our first screenshot on p27.

This file can be copied on to a 720k PC disc: you can use *PCDir* from Norwich Careware, or Minerva's *PC Access*. The latter has the advantage of being able to format PC discs as well as reading and writing, but it does cost more. Take the disc and a final printout of the document to

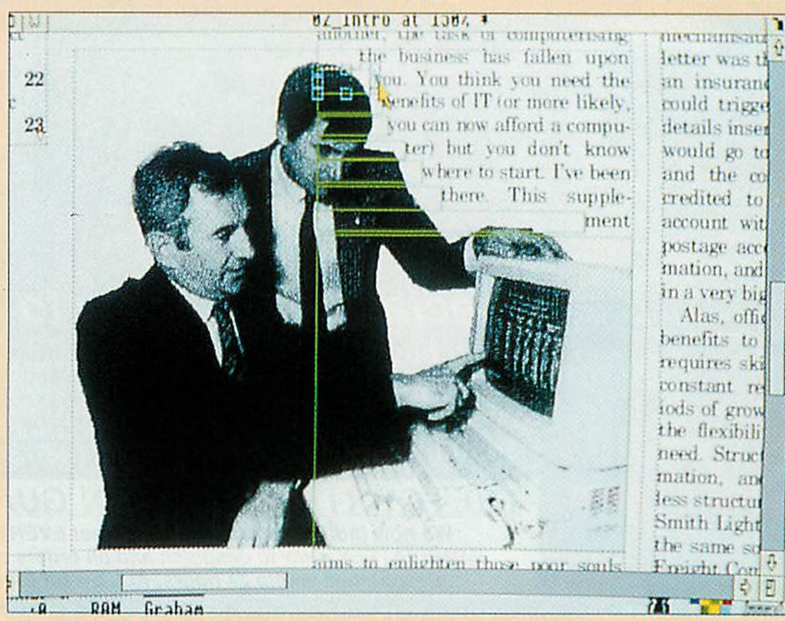
HOW TO MAKE RUNAROUNDS

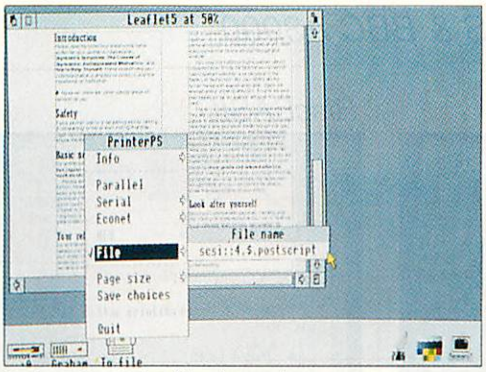
One of the areas where *Impression* is found lacking is in its ability to control runarounds – that is setting text around the irregular outline of an illustration. *Impression* can only run around frames: its frames either repel or they don't. The way to simulate this in *Impression* is first to make the main graphic frame non-repelling so that the text flows behind the illustration as shown in the first screenshot.

Then you add a number of repelling, transparent frames as shown below. These should 'cover' the area of the illustration in a mosaic-like fashion:. This technique can be applied both to Draw files and to sprites which appear to have an irregular outline. Though all sprites are rectangular, a mask can be used to make parts of a sprite 'transparent', so you can mask off the unwanted background of a scanned photograph for example.



It can also be useful to group the mosaic frames together: then you can move the mosaic without having to move individual frames one by one. To group frames, click Select on the first, then Shift-Select the rest. Then choose Group frames from the Frame sub-menu.





Saving a Postscript file of your document

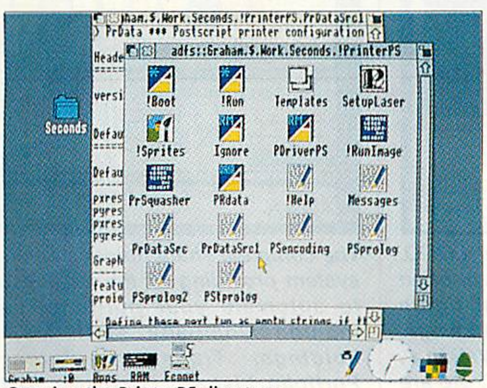
the bureau. Tell them it's a Postscript file on a PC disc: if the bureau has Macs (most do), then it can be read using Apple *File Exchange* or Dayna *Dos Mounter*, and sent to the imagesetter using Adobe *Font Downloader* or some similar utility. You should pay between £5 and £10 per A4 page for bromide or film output like this.

STEP TWO: SIZE AND RESOLUTION

If you have any greys, colours, sprites or non-Acorn typefaces, then this simple method will be disappointing. Odd typefaces will be substituted by Courier (Corpus) or Times (Trinity), and half-tones will be very coarse – the same as they are on a laser printer.

The solution to the problems of resolution and page size lie deep within *PrinterPS*. Double-clicking on the printer driver while holding down Shift opens the PrinterPS application directory as shown below. Within it are two vital files: PRdata and PSprologue. The former contains details of the Postscript printer itself, the latter handles the translations between Risc OS font names and Postscript typefaces.

PRdata is a condensed version of the PRdataSrc



Opening the PrinterPS directory

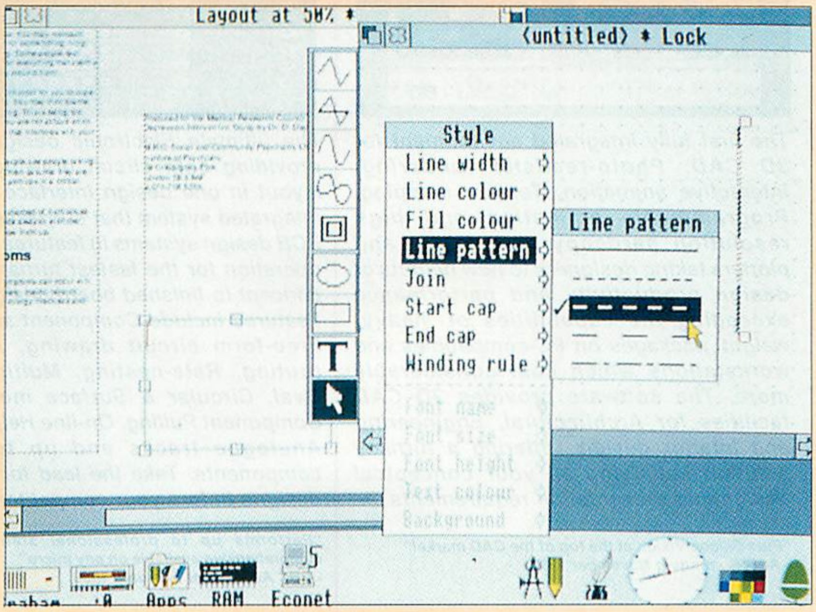
file. Load the Src file into *Edit*. There are two areas of the file which can be altered. The first is the 'Real printer definitions' near the head of the file. You can add your own definitions here, and they will appear as alternatives in the same way as you switch between mono and colour Postscript. We have provided you with several possible additions. The first addition (see the box on the right) gives details which could be added, for a typical imagesetter such as the Linotronic 300.

The second area for change is in the paper sizes. There are three already set up: A4, Letter and Legal. But even if you have an A3 laser printer, you can't utilise the whole paper area.

DOTTED BORDERS

To finish off the example six-panel leaflet we began last month, it needs a coupon requesting further information. And the coupon needs a dotted line to indicate where to tear it off. There is only one problem with this – *Impression* doesn't have a dotted frame border built-in. However, it does allow you to add your own borders with *Draw*.

Creating new borders is a tricky process, and your pattern can have odd side effects. But here's a reliable way to do a dotted border. First, fire up *Draw* – remember you can do this with *Impression* running. Draw a line 11mm long (use the 1x10cm grid as a guide). Now use the Style menu to choose its width – 0.5pt is quite thin – and set a dashed line pattern as shown in our screenshot. Don't make the line an exact number of dashes long, or it won't work properly: make sure neither end of the line ends with a gap between dashes.



Now go back to *Impression*, and on the Frame menu, choose the Border setup dialogue. Save the *Draw* file, and drag it onto the Borders target in the dialogue box. It will become border number 11 as shown above.

Finally, using the Alter frame dialogue, set border 11 on the edges of the frame you want in the usual way. You can now add a tiny frame with a " character (" in Selwyn font) to indicate where to cut out the coupon. If you use Fontdraw to turn the scissors character into an outline, it can be treated as a graphic and rotated into whatever position you want as a highly professional finishing touch.

ADDING A LINOTRON

printer_name:	Linotronic 300 (1270 dpi)	
printer_number:	2	
pxres:	1270	; dots per inch
pyres:	1270	
pxres_halftone:	1270/8	
pyres_halftone:	1270/8	
printer_name:	Linotronic 300 (2540 dpi)	
printer_number:	3	
pxres:	2540	
pyres:	2540	
pxres_halftone:	2540/8	
pyres_halftone:	2540/8	

Three new paper sizes can be added. A4Extra covers A4 documents with crop marks added as described last month – A3 and A3Extra are similar. These new paper sizes can replace the Letter, Legal and User sizes built into the PRdataSrc file.

The last line of each of the paper size definitions is Postscript program code responsible for setting the paper area. For the last two sizes, it also sets the halftone screen ruling – it effects the coarseness or fineness of any greys or sprites

SILICON VISION

DESKTOP SOLUTIONS FOR THE ARCHIMEDES & BBC A3000

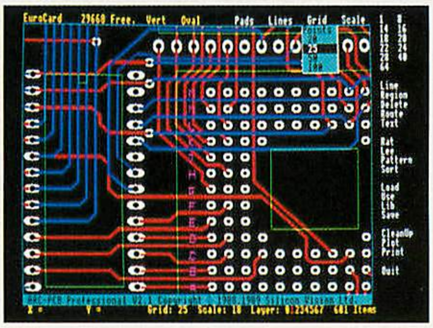
SolidTOOLS



The first fully integrated environment for 3D CAD, Photo-realistic rendering, Interactive animation, Texture mapping, Programmable animation and high resolution hardcopy to printers and plotters taking designers to new heights of design productivity and performance exceeding the capabilities of 'heavy-weight' packages on PC-compatibles and workstations which cost considerably more. The software provides 3D CAD facilities for Architectural, Engineering and Interior design offering a turnkey solution satisfying all your conceptual design and presentation requirements.

"Puts Silicon Vision at the top of the CAD market"
- A&B Computing November 1990.

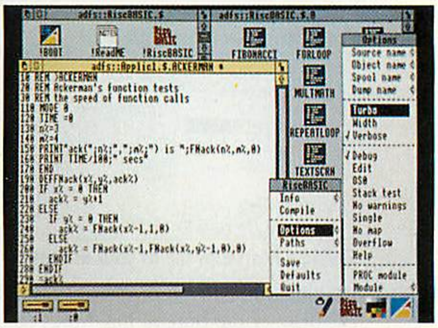
ARC-PCB Schematics



The ultimate Electronic design package providing both circuit drawing and pcb layout in one design interface for a fully integrated system that surpasses all other PCB design systems in features & speed of operation for the fastest turnaround from concept to finished board design.
Features include Component schematics, Free-form circuit drawing, Automatic routing, Rats-nesting, Multiple-layers, Oval, Circular & Surface mount Pads, Component Pulling, On-line Help, Digital & Analogue tracks and up to 300,000 components. Take the lead for your PCB designs before your competitors do.

"Performs up to professional standards. Most comprehensive available on any micro"
- BBC Acorn User February 1989.

RiscBASIC



The best BASIC V compiler money can buy. Features include an optimising compiler, relocatable modules with multiple star commands, Window-based or command line compilation environment, standalone code generation, in-line assembler with powerful floating point mnemonic extensions and a Desktop developers environment from a leading Software House renowned for technical excellence.

"If you are looking for THE compiler to go for, and are confused about which one deserves to win the very public battle that has been raging in the advertisements, well my preference is for RiscBASIC"
- RISC USER August 1989.

"very useful indeed for development work...produced significantly more efficient code" - Micro User July 1989.

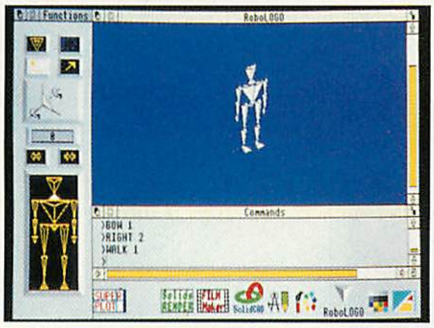
SolidsRENDER



The most advanced Ray Tracing package for the Archimedes producing photo-realistic images of designs taking into account multiple colour light sources, reflections, shadows, transparencies, refractions and textures for the highest quality pictures from the leading 3D graphics experts renowned for technical excellence. The high-speed ray tracer provides anti-aliasing for smooth edges, motion blur effects, and variable camera lens for wide angle and telephoto effects.

"SolidsRENDER offers the most comprehensive and advanced object properties ... the fastest ray-tracer ... outputting the highest quality images"
- A&B Computing November 1990.

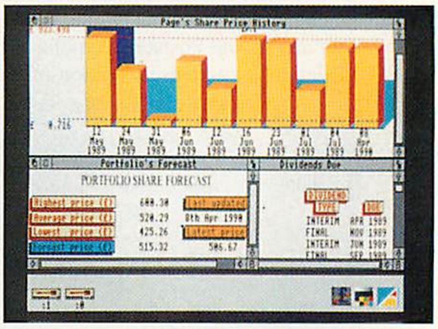
RoboLOGO



This new extension to traditional LOGO, provides three dimensional control of an articulated humanoid or animal figure based on the standard LOGO language. Natural commands such as 'Walking', 'Turning', 'Bowing', and 'Picking', etc are automatically represented graphically by natural movements of the 3D figure which is readily understood by students using LOGO as an introduction to computing. The traditional Turtlegraphics & 3D Glider features are also supported for students to further explore their school work.

"Takes turtlegraphics and LOGO programming into a new dimension. The things that the robot can do are only limited by imagination!" - Educational Computing April 1991.

ShareHolder



The complete share holder's management system providing all the facilities needed to automate your portfolio. Features include Company statistics, Share holdings, Transaction processing, Portfolio history, Forecasts, Dividends due, Share price updates plus built-in Calendar, Calculator and Hardcopy facilities for total integration.

"An excellent concept, the first professional share related package for the archimedes ... well thought through ... remarkably comprehensive."
- Archimedes World March 1991.

All RISC OS software run in native mode on all Archimedes Computers & BBC A3000 with 1 Mbytes.

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FAX: 081-427 5169. TELEX: 918266 SIGNAL G.

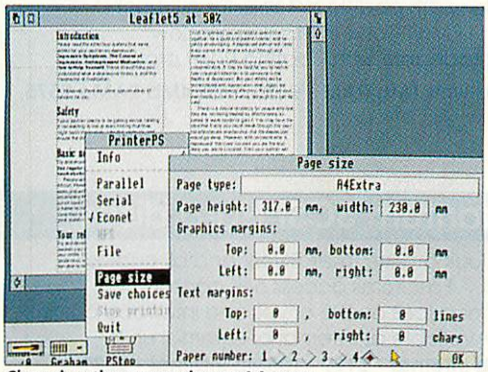
Product Catalogue

For more details on these and other software products in our range please enquire for a free copy of Silicon Vision's 'Desktop Solutions' product catalogue.

in the printed result. A ruling of about 60 is typical for a laser printer. Newspapers are half-toned at about 75 or 100 lines per inch and magazines like *Acorn User* at between 133 and 150. Your printer should advise you what to use, depending on the printing method, the quality of the paper and so on. The A3 definition is left at the default resolution so it's suitable for A3 laser printers like the QMS PS-8810.

Unfortunately, the screen ruling has to be built into the paper size, so you can only have four combinations of paper size and screen (you could have four versions of A4, all with different half-tone resolutions). Take care when you type the Postscript in: Postscript is case-sensitive, it's all one line, and there are | (vertical bar) characters within it too.

You can easily alter the screen ruling if you want some other halftoning: you can even alter it on a normal A4 laser printer. The default is around 60 lines per inch, but you can increase it to perhaps as much as 80 or 100dpi. But while the apparent resolution of halftones increases, the number of grey levels goes down: the default has 32 grey levels, but at 100 screen there are only eight different greys. Because of the greater number of dots on a 1200dpi imagesetter, there are enough greys even at 125 screen, but finer rulings need a resolution of at least 2400 dpi.



Changing the paper size to A4 extra

Save the new data file under a new name (perhaps PRdataSrc1). Next ensure you have *PrinterPS* on the icon bar. Then double-click on the *PRsquasher* program: this compacts the source file and creates a new PRdata which the printer driver uses. The input file can be called something like PDriver:PRdataSrc1, and the output file is PDriver:PRdata as shown in our next screenshot. Finally, Quit *PrinterPS* from the icon bar and re-load it ready for use.

The new printer definitions can be reached by clicking Select on the printer icon, then clicking on the printer name to cycle through the options: mono, colour and then any that you have added. The new paper sizes appear on the Page Size dialogue reached from the menu.

Once you have created your customised version of *PrinterPS*, you can use it to produce Postscript files to send to the bureau. It ensures that the page size is correct for your document – even if it is larger than A4. One point to watch is printing wide pages. For instance, A3Extra cannot be used on common 303mm wide imagesetters, like the Linotronic 300. If in doubt it is always best to check the maximum output width with your bureau.

PAGE SIZES

This section from PrDataSrc is available on subscribers' disc or can be copied in. When typing in only press RETURN when you come to a paragraph character (¶). Each page_name is padded with semicolons so that page name plus semicolons is 80 characters long. The number of semicolons to type is in brackets. Do not type the text within in the brackets, or the brackets, simply type in the number of semicolons indicated.

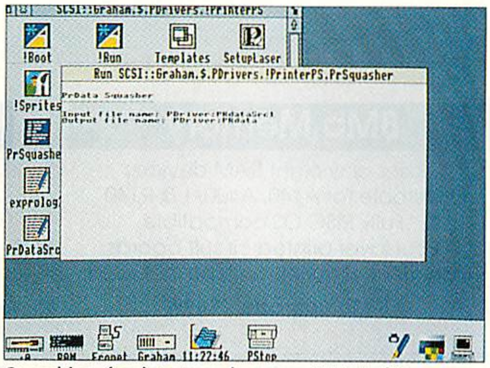
```
page_number:        1¶
page_name:          A3 (default
screen)(tap the semi colon key 61 times)¶
page_width:         0000842000¶
page_height:        0001191000¶
page_bottom:        0000000000¶
page_top:           0001191000¶
page_left:          0000000000¶
page_right:         0000842000¶
text_top:           0000000000¶
text_bottom:        0000000000¶
text_left:          0000000000¶
text_right:         0000000000¶
page_selection: %%BeginFeature: Page
Size A3|Jstatusdict begin 842 1191 0 1
setpageparams end|J%%EndFeature¶

page_number:        2¶
page_name:          A4Extra (125
screen)(tap the semi colon key 60 times)¶
page_width:         0000652000¶
page_height:        0000899000¶
page_bottom:        0000000000¶
page_top:           0000899000¶
page_left:          0000000000¶
page_right:         0000652000¶
text_top:           0000000000¶
text_bottom:        0000000000¶
text_left:          0000000000¶
text_right:         0000000000¶
page_selection: %%BeginFeature: Page
Size A4Extra|Jstatusdict begin 652 899 0
1 setpageparamsend|J%%EndFeature|J
currentscreen 3 -1 roll pop 125 3 1 roll
setscreen¶

page_number:        3¶
page_name:          A3extra(150
screen)(tap the semi colon key 60times)¶
page_width:         0000899000¶
page_height:        0001248000¶
page_bottom:        0000000000¶
page_top:           0001248000¶
page_left:          0000000000¶
page_right:         0000899000¶
text_top:           0000000000¶
text_bottom:        0000000000¶
text_left:          0000000000¶
text_right:         0000000000¶
page_selection: %%BeginFeature: Page
Size A3Extra|Jstatusdict begin 899 1248 0
1 setpageparamsend|J%%EndFeature|J
currentscreen 3 -1 roll pop 150 3 1 roll
setscreen¶
```

HINTS AND TIPS

● A cheaper alternative to using an imagesetter is to create camera-ready copy on bromide or film. Buy a stock of very smooth, shiny paper such as 'Bromex gloss', available from graphic art shops or office stationers. You can also use a 600dpi laser printer, but be wary of any halftoned greys 'filling in'.



Squashing the data to make a new PRData file

STEP THREE: EXTRA FONTS

The PSprolog file within the *PrinterPS* application directory links the names of Risc OS typefaces with the equivalent Postscript faces. It's important to realise that not all Risc OS faces have Postscript equivalents – check with the type supplier if you're unsure, but in general you can rule out any of the more decorative and frivolous examples.

If you add a new typeface to your system, you cannot automatically print it out in Postscript. And unless the face is built into the printer, you can't print it at all! So for Risc OS 2 users, you're practically limited to the 35 faces included with most Postscript laser printers.

If you do add a new face, then there are a couple of changes to make to the PSprolog file. Type suppliers include instructions, but here's a summary. First load the PSprolog file into *Edit*. At the beginning is a list of all the typefaces on your machine. You need to add the Postscript name of each new face – typically there will be four weights when you purchase a package of typefaces, and the equivalent Postscript names will be listed in the documentation. As an example Beebug's *Chaucer* is equivalent to Postscript *Zapf Chancery* medium italic – for which the correct name is 'ZapfChancery-MediumItalic'. Add this at the beginning in exactly the same form as the existing list (two % signs, single spaces and so on). Be particularly careful with upper and lower case letters in these names.

The second addition to PSprolog is at the end of the file. Here is a list of Risc OS names, followed by their Postscript names again, and two Postscript commands. Once again copy the format of the existing entries carefully.

Making these changes allows you to prepare complex document files for output on to film or bromide at a bureau. For black and white work, these techniques are perfectly adequate – and in fact this very article was output using them.

PROFILE

Graham Bell is the Systems Manager for Redwood Publishing. He advises a number of well-known magazines, including *BBC Acorn User, Good Food, Gardeners' World* and *Good Holidays*, on their desktop publishing needs.



ON COURSE

Sarah Burns finds out how to become a DTP expert, courtesy of Minerva training

Contrary to popular belief, not everyone in the *BAU* office is a technical genius. Indeed, as the new editorial assistant, I was a complete novice to the Acorn world: my understanding stretched only as far as *Tetris*. And since *BAU* is produced using the DTP application, *Impression II*, being hopeless was something of a hindrance. So I, Sarah Burns, latest addition to the *BAU* team, was sent forth to Exeter, home of Minerva software, to set matters right and become brilliant.

My course was a day's training in *Impression II* although there are several other courses available. Groups are only ever as large as six and they are generally limited to four, so that each student receives a high level of personal assistance. Also a questionnaire, sent a few weeks before the course, ensures that you are grouped with people who are as competent (or incompetent) as yourself.

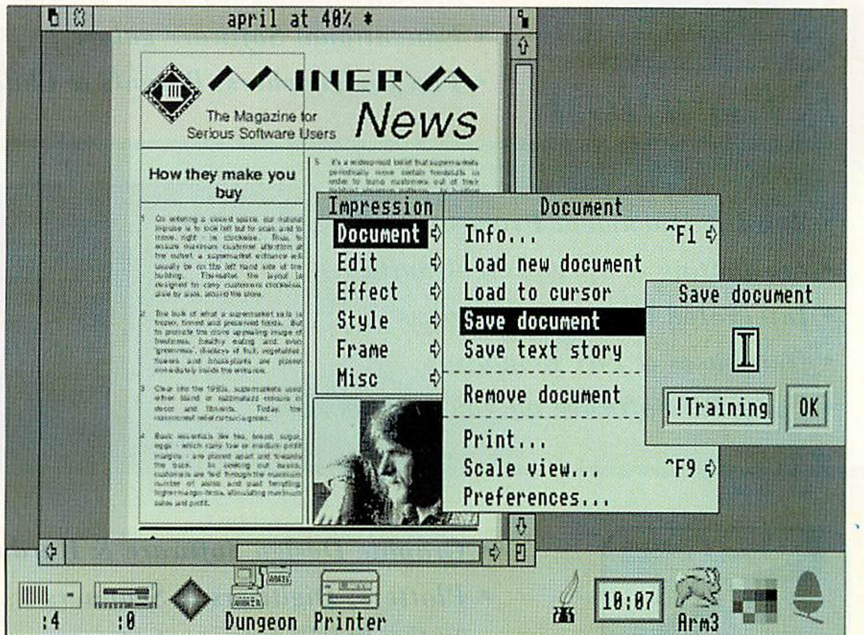
Training began at 9.30am and, with not a moment to lose, our instructor launched into the lesson. The introduction to *Impression*, I must admit, left me confused but it became more exciting as we moved on to editing a document and manipulating text. By using our new skills, we reproduced a Minerva advert and in the process learnt even more. Techniques such as importing and sizing graphics, creating frames, changing fonts and effects were brought into play. We made seven frames on one page and filled them with different text and graphics provided on a disc.

As the text was in small plain print, we altered the size and style as frivolously as we wished. The graphics were sized and rotated until they fitted into the frame. Finally a border was selected to frame the advert and finish our first masterpiece. Unbelievable but true, I was learning and enjoying myself.

Our instructor carefully guided us through each function and even covered the more obvious details, such as how to use the mouse and how to select and save text. To help matters along, an instruction book was supplied that covered the main points of the day.

Brainache and lunch arrived at the same time and after lunch it was heads down again. The afternoon session was dedicated to copying a Minerva news sheet. This killed at least 20 birds with one stone as we whizzed through designing and formatting master pages, editing the base style, rulers, other styles and available options, stopping only for one well-deserved tea break.

The news sheet was made up of four pages and we created the master page with a header, footer and page number. After lots of mouse-clicking, the text flowed from one frame to another. For the advert we had used the Effect menu to format the text. But this time we were introduced to the Styles menu. With this new-found magic button we changed the main heading and sub-heading.



Recreating this Impression newsletter is one of the tasks set by the course

I also changed most of the text for good measure, ignoring the recommended settings and ending up with a big mess. Ah well, you learn from your mistakes. Familiarising us with the new ruler option took some time but finally we aligned the text. The result, a complete newsletter page, can be seen above.

One day is not long to learn the wonders of *Impression* but most things were crammed in. As soon as a question entered my head it was answered, before I had a chance to speak: no one could accuse this instructor of skimping. The course was not, thankfully, too technical, although sometimes I found it hard to keep up.

Another bonus is that the training was very personal and the instructor tried to relate the application to our work. As the news sheet was particularly relevant to my job, the instructor emphasised how to copy text and paste it elsewhere on the page and checked that I understood how to alter frames.

In its brochure, Minerva claims that training gives greater operator efficiency and better motivation. And it's all true! The course taught me the basics of DTP and, by the end of the day, I had a disc of finished work and could confidently create documents for myself. After a few more handshakes and a certificate of achievement, I am now officially an expert!

PRODUCT DETAILS

Course: Impression II
Price: £110
Company: Minerva Training
Tel: (0392) 426160

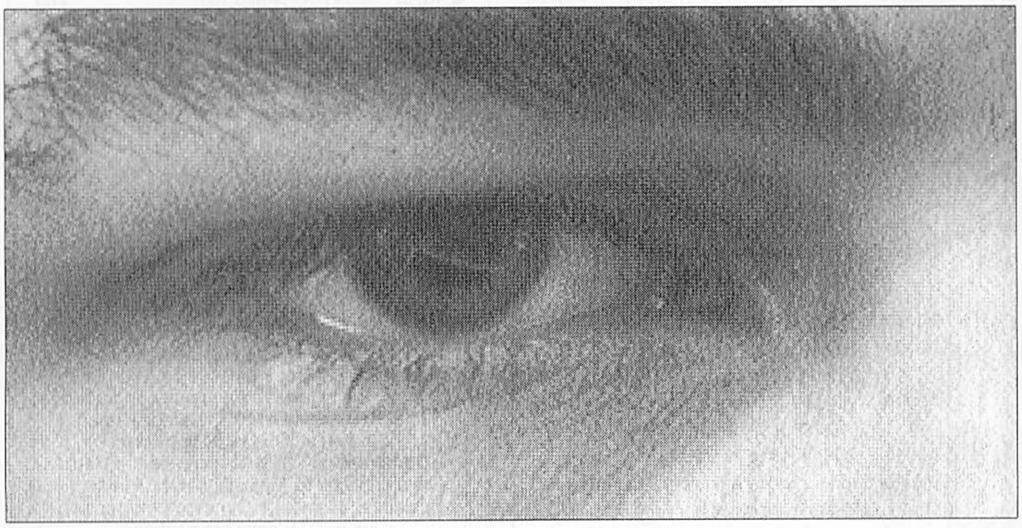
Other courses: Minerva also offer a range of awareness courses, training for specific software packages, courses about Risc OS and customised training. All course fees include refreshments, lunch and course materials
Length: Half – two days
Price: £60 – £220

DIGITISE IT!

Enter our competition and win one of ten HCCS Vision Digitisers

The Vision Digitiser from HCCS is a real-time digitiser which allows BBC A3000 and Archimedes users to digitise and store video images from any PAL video source (TV, video, camcorder). It is both a simple and remarkably cheap product, costing only £49 plus VAT.

Now, in conjunction with HCCS, we are giving away ten Vision Digitisers in our easy-to-enter competition.



Digit-eyes images from any PAL video source, such as a camcorder, with the Vision Digitiser

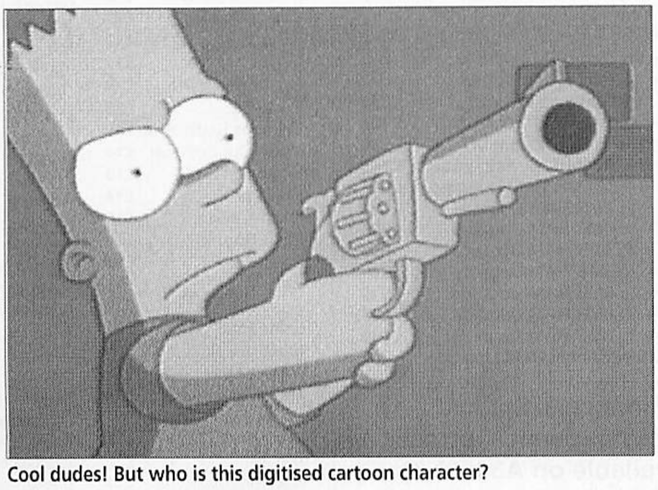
VISION DIGITISER

The Vision Digitiser card is a half-width podule with a single phono socket on the back panel for receiving the composite video signal, which is then digitised in monochrome and can be saved in the usual Risc OS manner.

The software supplied with the card includes the *Vision* application, which produces a desktop window showing the video signal, continually grabbed at a rate of about once a second. Brightness and contrast are controlled from software and the continuous image is displayed in a low resolution form for speed. When grabbed, this is converted to a higher quality 640×250, 256-grey scale sprite. Even from standard VHS videos, useful images are simple to grab.

The final sprite can then be saved to disc in the normal way and exported to applications for art, DTP, and so on. Although the images are saved in mono, you can enhance them with colour using other applications, such as *Paint*.

The quality of images produced, considering the constraints of the video source, is about as good as you are likely to get on the Archimedes. And for the money, the results are exceptional.



Cool dudes! But who is this digitised cartoon character?

HOW TO ENTER

To stand a chance of winning one of ten Vision Digitisers, simply answer the questions below, complete the tie-breaker and send to coupon (or a photocopy) to: Vision Digitiser competition, *BBC Acorn User*, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. The closing date for entries is Monday July 27th 1992. Usual rules apply.

VISION DIGITISER COMPETITION

Please include your name and address details, answer both of the questions below and complete the tie-breaker

Name ....

Address ....

.... Postcode ....

QUESTIONS

1. Which famous cartoon character has been digitised on this page?

....

2. Where is HCCS based?

....

Tie-breaker (please complete in no more than 20 words)

I would like to own a HCCS Vision Digitiser because ....

....

....

....

Watford Electronics

(A member of the Jessa group of Companies – Established 1972)

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Archimedes micro

System	Basic	Mono	Colour	Multiscan
A540/1	£2495	£2555	£2655	£2815
A3000	£599	£665	£759	£924
A3000L/C	£642	£708	£802	£967
A5000H/D	–	–	–	£1499
A5000L/C	–	–	–	£1531

Unbeatable Sale Offers on Archimedes Micro

When you purchase an Archimedes Micro from Watford, look what you get FREE with it

Micro	Free Offer
A540/1	Multiscan monitor with VIDC enhancer and LC20 Printer
A3000	2Mb RAM; Monitor plinth and Acorn's A3000 Shoulder Bag (carrying case)
A5000	Upgraded to 4Mb RAM

Plus of course our no quibble 12 months FREE On-Site Maintenance on all above Micros.

- A5000 – 100Mb 18mS Hard Disc Upgrade £269
- A5000 – 210Mb 18mS Hard Disc Upgrade £459

Archi Accessories

- 3.5" 800K 2nd Floppy Drive (305/310) £118
- 5.25" 800K external Floppy Drive £85
- I/O Podule (Analogue/User/1MHz bus) £79
- I/O Podule (Analogue/User) £49
- MEMC 1A Upgrade £29
- MIDI add-on to I/O Podule £27
- MIDI Expansion Card £65
- Econet Network Board £42
- Archimedes IEEE Interface Adaptor £269
- Dual RS232 Podule £195
- 16 bit parallel I/O Card £195
- Archi replacement mouse – New design £32
- PC Emulator v1.7 £85
- Software Developers Toolbox £149
- Floating Point Unit £455
- SCSI Adaptor Expansion Card £156
- Keyboard Extension Lead £6
- 2 Podule Backplane £20
- 4 Podule Backplane £25
- Fan for above backplanes £8
- Risc Os Extras Software Disc £5
- Ethernet Card £220
- SCSI Card 8 bit £129
- A5000 – 2 to 4Mb RAM Upgrade £92

A3000 Accessories

- 3.5" External Drive £95
- Monitor Stand £15
- Technical Manual £39
- Serial Upgrade £17
- A3000 Dust Cover £5
- A3000 plus Monitor Dust Cover £9
- A3000 User Port/Midi Upgrade Card £44
- A3000 User/Analogue/IIC I/O Card £42
- A3000 External Podule Case £13

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Archimedes Hard Disc

Watford's ST506 Hard disc drives for A310 & A410 series fit internally into the space provided.
P.S. A310 upgrades require a backplane and a fan.

- **3HDP** – Hard Disc Podule only £99
- **3HD20** – 20Meg H' Disc + Podule for 310 £195
- **3HD40** – 40Meg H' Disc + Podule for 310 £285
- **3HD50** – 53Meg H' Disc + Podule for 310 £359
- **4HD20** – 20Meg Hard Disc for 410 £96
- **4HD40** – 40Meg Hard Disc for 410 £195
- **4HD50** – 53Meg Hard Disc for 410 £260
- A3000 20Meg Hard Disc + Podule £279
- A3000 40Meg Hard Disc + Podule £379

For Low Cost, High Performance Archimedes IDE Hard Disc Drives, please turn to page 13

Archimedes A3000 Desk Top Publishing (DTP) Sale Offer

A3000 BBC Archimedes Micro with 3.5" Floppy Disc Drive and a mouse, upgraded to 2Mb RAM, COLOUR Monitor + Lead, 20Mb fast IDE Hard Disc Drive, 'Compression' Utility to increase the Hard Drive capacity to Typically 40Mb, The highly acclaimed Computer Concept's Impression Junior DTP software package.

RRP: £1299

Sale Offer Price: £875

Above Package plus Acorn's Learning Curve **£892**

NEW DTP Package as above but with a 30Mb fast IDE Drive, (with Compression utility, the capacity is increased to typically 60Mb) **£899**

Above package with Acorn's Learning Curve **£942**

Special Education discounts available on above package, micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

(0923) 237774/250335

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

- **R300**-4 Layer RAM upgrade board (Bare). Requires 8 x 4MBit RAMs £25
- **R302**-A3000 – to 2MB RAM Upgrade £36
- **R303**-A3000 – to 2MB RAM Upgrade (expandable to 4MB) £55
- **R304**-A3000 – to 4MB RAM Upgrade £125
- **R311**-A305 – to 1MB RAM Upgrade £30
- **R312**-A305/310 – to 2MB RAM Upgrade £149
- **R314**-A305/310 – to 4MB RAM Upgrade £205
- **R412**-A410/1 – to 2MB RAM Upgrade £30
- **R413**-A420/1 – to 4MB RAM Upgrade £60
- **R414**-A410/1 – to 4MB RAM Upgrade £90
- **R810**-A410/1 – to 8MB RAM Upgrade £579
- **R820**-A420/1 – to 8MB RAM Upgrade £549
- **R840**-A440/1 – to 8MB RAM Upgrade £479
- **R814**-R140 – to 8MB RAM Upgrade £499
- **A5000** – to 2MB additional RAM Upgrade £92

0% Finance & Special Teachers/Academics' prices Now available on A3000L/C and A5000 L/C Micro Systems

Convert your Archi 410 to a 420 or 440 with Watford's unique Upgrade Kits

- **UP10** – to 2MB RAM + 20MB Hard Disc **£159**
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Revelation 2	£80
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Bug Hunter	£13
Caverns	£13
Chess 3D	£14
Chocks Away 2	£14
Chocks Away Extra	£14
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Conqueror	£15
Cops	£14
Corruption	£18
Crisis	£21
Elite	£33
Enter the Realms	£19
Enthar Seven	£21
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E-Type Designer	£13
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Fireball 2	£19
Grievous Bodily Arm	£19
Holed Out Designer	£13
Holed Out Golf	£13
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Olympics	£14
Pandoras Box	£18
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Pirate	£16
Power Band	£14
Puncman 1 & 2	£16
Puncman 3 & 4	£16
Pysanki	£14
Quazer	£10
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Real McCoy 2	£23
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Repton 3	£14
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White Magic 2	£15
Wimp Game	£13
Worldscape	£16
XFire	£19

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Arcterm 7	£64
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FlexiFile	£97
Genesis Plus	£68
Genesis 2	£99
Investigator 2	£22
JX Archi Colour Printer Driver for Citizen & Star Printers	£15
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Notate	£42
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Super Plot	£28	Data Vision	£110
Super Dump	£22	Share Holder	£135
Arc PCB Professional			£275
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Acorn's Archi DTP Package	£108
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Impression 2 DTP Pack	£125
Impression Junior	£69
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Impression II Borders Disc	£19
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Archi Wordprocessors

Pendown Archi	£48	1st Word Plus – 2	£63
Pendown Outline Fonts	£18	Archie Spell Master	£25
		PD Spellchecker	£40
Wordwise + Disc	£24	Graphic Writer	£19
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AlphaBase	£36	Magpie	£40
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- Desktop Folio – Wordprocessor, Desktop & Interactive Publishing. Ideal for school environment. £75

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

The card is provided with an extensive manual explaining installation, all software commands, connector pin outs, hardware addresses and example programs.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices.

£42

Concept Keyboards

Standard A3 Keyboard with BBC Software	£138
Standard A4 Keyboard with BBC Software	£109
Archi A3 Keyboard	£139
Archi A4 Keyboard	£110

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. £15

Archimedes to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.
New RISC OS Version **Only £15**

Archimedes External Disc Drive Interface

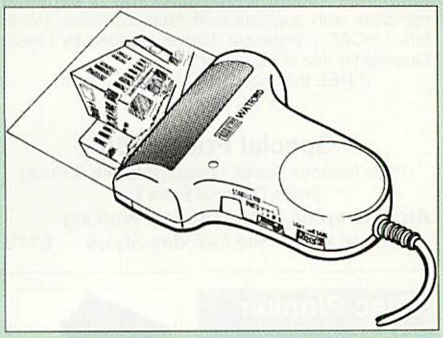
With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.
- A300/A3000 £21
- A400 £25

More Archimedes Products See Pages 3, 5, 6, 8, 10, 13

LANGUAGES (Archimedes)

ISO-PASCAL; FORTRAN 77			£77 each
Assembler; LISP; Prolog X			£149 each
ANSI C Rel. 3	£125	Logotron Logo	£45
Macro Assembler	£40	Risc Basic	£120
Robo Logo	£69	Risc FORTH	£110
BASIC Compiler	£77		

NEW 256 Grey-Scale Scanner



Watford proudly introduces its new innovative 256 grey-level hand scanner for the Archimedes range of micros. It offers up to 400 dpi scanning resolution, complete with software.
256 Grey-Scale Scanner is ideal for incorporating pre-drawn logos, artwork, photographs and sketches into desktop publishing documents and other graphics programs. Designed by our own R & D team, it offers the best overall scanning solution for Archimedes micro. Just compare the competition on our price and these outstanding features:
- Full 105mm 400dpi scanning operation in just 3mS per line! (Twice as fast as most scanners.)
- Selectable 256/16 grey levels
- Full scan preview, scale to fit windows
- Complete set of image enhancement tools
- Single width podule
- True brightness and contrast control
- Fast RISC OS printing
- Over 1000 Image processing options; smoothing, enhancement, edge deletion, convolution, etc.
- Full Interface to ChangeFSI

Launch Price £185

ULTIMUM – Archimedes A3000 Podule Racking System



THE ONLY LOGICAL WAY TO EXPAND YOUR A3000 COMPUTER

Price: £149

Minerva's Archimedes Software

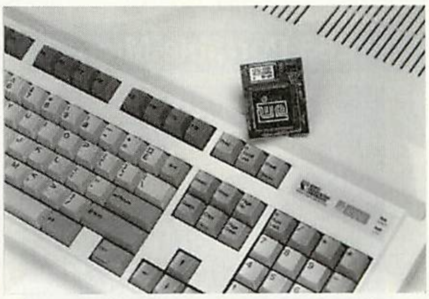
EasyWord	£18	Mailshot*	£27
Home Accounts	£35	Reporter*	£27
Time Tabler	£549	School Admin*	£65
System Delta	£59		

System Delta Program Reference Manual £29
** Requires System Delta to operate*

Stand alone Business Accounts Packages
Sales; Purchase; Order Processing and Invoicing; Nominal; Stock management
£79 per module
or Complete Business Package **£325**

ARM 3 Turbo Card MkII

Simply The Best



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £199. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £18.
(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Offer Price £169

Acorn have satisfactorily evaluated Watford's ARM 3 upgrade and the A3000 upgrades are fitted by Acorn approved surface mount technology centre, therefore its fitment will not invalidate Acorn's warranty on the micro.

Continued→ → → → → → → → → →

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL plus FREE OFFER (see below) **£399**

FREE OFFER



A 5.25" Double Sided, 40/80 track switchable 400K Disc Drive complete with cables and a Utilities disc incl. 2 games, plus

Gemini's OFFICE MATE & OFFICE MASTER packages on Disc consisting of: Database, Spreadsheet, Beebplot graphics. Accounts packs: Cashbook, Final Accounts, Mailist, Easyledger, Invoice & Statements, Stock Control.

FREE with every BBC Master purchased from us during June

Add-Ons & Accessories

Econet Module for the Master		£42
Twin ROM Cartridge for Master		£9
Quad ROM Cartridge for Master		£14
Master Reference Manual I	(No VAT)	£14
Master Reference Manual II	(No VAT)	£14
Master Advance Ref Manual	(No VAT)	£17
64K Upgrade Kit for B+		£32
Acorn 1772 DFS Kit complete		£49
ECONET Upgrade Kit for BBC B		£42
ALL ECONET UPGRADES Available		
ARIES' IEEE Interface for BBC B & Master		£238
Morley Teletext Adaptor with ATS Rom		£99
Ecolink		£270

Z88 Portable Micro



£179

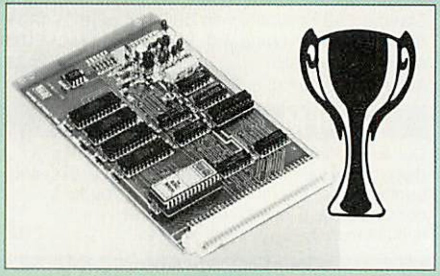
FREE

With every Z88 purchased from us, we are giving away absolutely FREE, a Z88 to BBC Interface Link, 4 rechargeable batteries and a compact Mains Battery Charger worth £38.

Z88 ACCESSORIES

• 32K RAM Pack or 32K EPROM Pack	£16
• 128K RAM Pack or 128K EPROM Pack	£32
• 512K RAM Pack	£86
• 256K Eprom Pack	£55
• Z88 Eprom Eraser Unit	£38
• Z88 Carrying Case	£8
• Z88 Computing Book	£9.95
• AA Nicad Rechargeable Battery	£1.50
• Battery Charger Compact & Fast	£6
• Z88 Serial Printer Cable	£8
• Z88 Parallel Printer Cable	£18
• Z88 to Archi Link	£15
• Z88 to BBC Link £8 • Z BASE	£56
• Z88 to PC Link II £27 • Z TAPE	£42
• Z88 to Macintosh £32 • Z TERM	£42
• Z88 Mains Adaptor £9 • Z88 Modem	£114

Archi Real-Time Digitiser



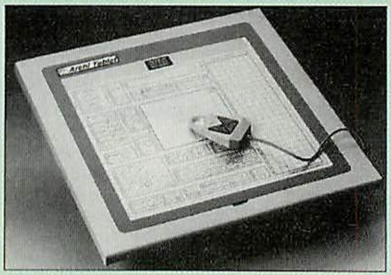
Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £119

A Set of Colour Filters for colour image grabbing using a video camera **£16**

Archi Graphic Tablet



The Archi Graphic Tablet offers performance and accuracy comparable to other tablets priced at well over £400, and has the useful addition of a liftable cover, which can hold tracing material or menu templates securely. The package is supplied complete with sophisticated Archi software. (Now, fully LinCAD compatible. Recommended by Linear Graphic for use in Education).
(FREE this month, PC Mouse Drivers & Art package)

Special Price £165

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£15**

Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus **£110**

Disc Plonker Rack



When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: **£2**

Special Bulk Offer Discs

(Supplied packed in Anti-Static Lockable Storage Units)
(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£28	£33	£38
• With Sleeves 5.25"	£31	£36	£41
• 3.5" D/S D/D	£27 for 50		£49 for 100

Acorn & Watford DFSs

• Watford sophisticated DFS ROM	£16.00
• Watford DFS Kit complete	£69.00
• We will exchange your existing ROM for Watford's ultimate DFS ROM at only	£12.00
• DFS Manual (comprehensive)	£6.95
• Acorn DNFS ROM	£17.00
• Acorn ADFS ROM only	£25.00
• Acorn 1772 DFS ROM Kit	£49.00

(The single Density DFS system is now old technology. Like Acorn, Watford too have replaced it with their more up-to-date 1772 DDFS Interface. We have informed most of the software houses of this decision in order that they can ensure compatibility with our highly sophisticated and fully Acorn compatible DDFS).

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus the added features as follows:

- Acorn ADFS compatible – Use ADFS on our DDFS board.
- Auto 40-80 Track sensing – no need to fuss with 40/80 track switches.
- An extremely powerful 8271 emulation – ensuring compatibility with almost all software.
- New low profile – small footprint board.
- Option to double the speed of file handling operations – BPUT and BGET.
- Operates in both single and double density modes.

• Complete Kit	Special Price **£44**
• DDFS Manual	(No VAT) **£6.95**
• We will exchange your existing DFS Kit for our sophisticated DDFS for only	**£26**

3M – Diskettes

3M – SCOTCH Diskettes with Lifetime warranty from Watford Electonics your 3M Appointed Distributor

• *10 x 5.25" S/S D/D 40T (744)*	*£5*
• *10 x 5.25" D/S D/D 40T (745)*	*£5*
• *10 x 5.25" S/S D/D 80 Track (746)*	*£7*
• *10 x 5.25" D/S D/D 80 Track (747)*	*£7*
• *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT*	*£9*
• *10 x 3.5" S/S D/D 40/80 Track*	*£7*
• *10 x 3.5" D/S D/D 40/80 Track*	*£7*
• *10 x 3.5" Double Sided High Density*	*£13*

Top Quality 3.5" & 5.25" Diskettes

To complement our range of Quality Discs and Disc Drives. WE are now supplying SPECIAL OFFER packs of 10 Lifetime guaranteed discs. Each disc has a reinforced hub ring. Supplied complete with selfstick labels and a Plastic Library Disc Box.

• *10 x **M3** 3.5" D/S D/D 80 Track*	*£7*
• *10 x **M9** 3.5" D/S High Density*	*£12*
• *10 x **M4** 5.25" S/S D/D 40 Track*	*£5*
• *10 x **M5** 5.25" D/S D/D 40 Track*	*£5*
• *10 x **M7** 5.25" D/S D/D 80 Track*	*£7*
• *10 x **M8** 5.25" D/S H/D Hi-Density*	*£9*
• ***M2** 3" Double Sided*	*£2.50 each*

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Various UK "manufacturers" of disc drives for the BBC Micro (more accurately, "packagers" label other manufacturers drives with their own name). We buy the high quality NEC and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.

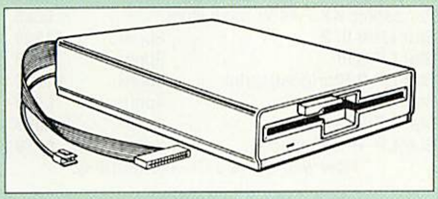
If you look around the popular BBC Micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.

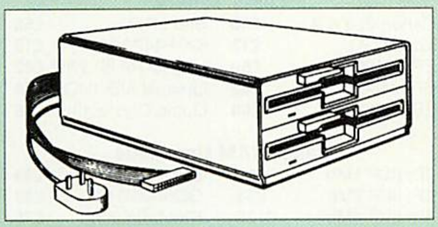
Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate (extensive tests within our workshops have confirmed this). All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. ***Ideal for Schools & Colleges.***

When using a BBC Micro, most people find themselves short of desk space. The Watford's BBC Micro plinths form an ideal way of recovering some of this precious space. Your BBC Disc Drive and Monitor can all occupy the same vertical footprint and still be comfortably situated. With the Watford Double Plinth, your Disc Drive is mounted vertically at one side, leaving a very valuable area directly in front of you for such useful items as spare discs, pen, paper, reference manuals, etc. Follow the trend with a Watford plinth. *(Turn to the 6th page of our advert for the Plinths).*

P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"





Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	**£70**
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£138**
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	**£80**
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£149**

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

3.5" Disc Drive

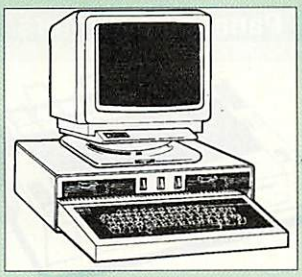


These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	**£59**
• **CLD35:**	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£82**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand



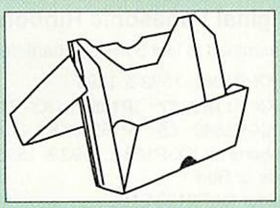
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£165

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£154

Plastic Library Cases



DLC1 –	Holds 5 x 3.5" Discs.	**£1.50**
DLC2 –	Holds 10 x 3.5" Discs.	**£1.90**
DLC3 –	Holds 5 x 5.25" Discs.	**£1.60**
DLC4 –	Holds 10 x 5.25" Discs.	**£2.00**

Disc Albums

Attractively finished in leather-look PVC Vinyl

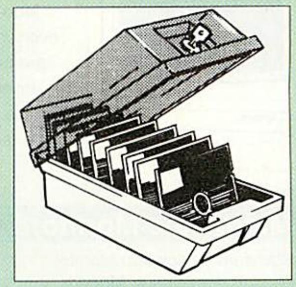
DW1 –	Holds 6 x 3.5" Discs	**£2.50**
DW2 –	Holds 6 x 5.25" Discs	**£3.00**
DW3 –	Holds 20 x 5.25" Discs	**£3.50**
DW4 –	Holds 40 x 3.5" Discs or 5.25" Discs	**£4.50**

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

Antistatic Lockable Disc Storage Units



Gives double protection – Strong plastic case that affords real protection to your discs.

Antistatic helps avoid data corruption whilst in storage. The smoked top locks down.

Dividers and adhesive title strips are supplied for efficient filing of discs.

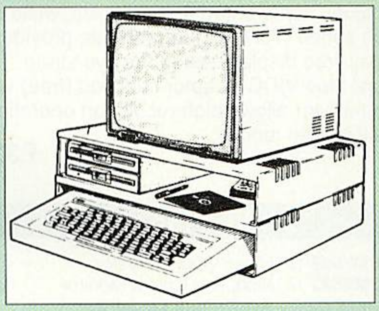
• **M35**	– holds up to 50 5.25" discs	**£4.95**
• **M85**	– holds up to 95 5.25" discs	**£6.95**
• **M25***	– holds up to 25 3.5" discs	**£4.95**
• **M50**	– holds 50 3.5" discs	**£6.50**
• **M100**	– holds 100 3.5" discs	**£6.99**
• **M10**	– holds 8 of No. 10 Data Cartridges	**£15**

* Not lockable

Dust Covers (For our Disc Drives)

Single CLS (without PSU)	**£3.20**
Single CS (with PSU)	**£3.25**
Twin CLD (without PSU)	**£3.85**
Twin CD (with PSU)	**£3.90**

Plinths for the BBC B, BBC Master & A3000



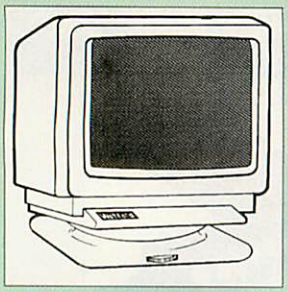
Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationery. The computer slides neatly in the lower section allowing easy access to remove the lid. Colour: Matching BBC Beige.

• Single BBC Plinth	420 x 310 x 105mm	**£13**
• Double BBC Plinth	420 x 310 x 210mm	**£24**
• Single Master Plinth	490 x 310 x 105mm	**£14**
• Double Master Plinth	490 x 310 x 210mm	**£26**

• A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive **£14**

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Continued→ → → → → → → → →



FREE Connecting lead with every monitor purchased from us. Please specify type required.

Microvitec Monitors

- **1431** – Standard Resolution Monitor £169
- **1451** – Medium Resolution Monitor £209
- **Cub3000** Medium Res for A3000 £189
- **1441** – High Resolution Monitor £359
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239

Now 3 years Parts & Labour warranty on all Microvitec Monitors

Multiscan Colour

- Eizo 9060S £389
- NEC 3FG £370
- NEC 4FG £465
- NEC 5FG £850
- NEC 6FG £1525
- Taxan 770LR £362
- Taxan 775 £362
- Taxan 795 £397
- Taxan 875 £685
- VIDC Enhancer £25

(P.S. Taxan 795 monitor is supplied with a FREE VIDC enhancer board)

Aries AlphaScan Monitor

Pound for Pound, the AlphaScan VGA Multiscan monitor provides the maximum performance and greatest flexlbility of any 14" colour monitor for the Archimedes micro. Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The Multivideo VIDC Adaptor supplied (free) with the monitor allows high resolution operation in all screen modes. **£325**

Philips Monitors

- **BM7502** 12" Hi-res Green Monitor £67
- **CM8833** 14" Med. Res Colour Monitor £167
- Dust Cover for Philips Monitors £6

STAR BUY

- **PHILIPS 14"** Medium Res, dark glass, attractively finished Colour Monitor. A push-button switch toggles between Hi-Res monochrome green text mode and full colour display. (Please state the type of Connecting Lead you require). **ONLY £166**

Spare Monitor Leads

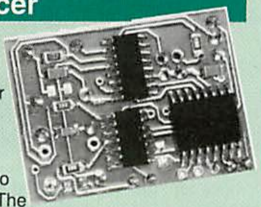
BNC Lead for Zenith or Philips	£3
Skart Monitor Lead	£5
RGB lead for TAXAN Monitors	£3
Archimedes Colour Monitor Lead	£7.50

Aries 2000 Colour Monitor

This attractively finished, etched screen medium res monitor is supplied complete with built-in speaker, volume control and video output. All controls are located on the front panel for ease of use. Ideal for BBC, BBC Master, Archimedes and Amiga.

A bargain at £159

VIDC Enhancer

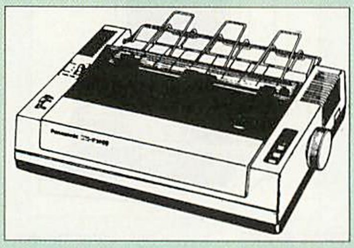


This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A WIMP application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

Super VGA VIDC Card: Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control **£45**

MultiVideo VIDC Card: As above but for MultiScan monitors only. **£25**

Panasonic Printers



- KX-P1123 £129
- KX-P1124i £173
- KX-P1170 £100
- KX-P1624 £272
- KX-P1654 *£335
- KX-P1695 £272
- KX-P2624 *£295
- KX-P2180C £165
- KX-P2123C £219

*** Price includes 12 months On-site warranty**

Cut Sheet Feeders

P36 – 1124/24i £79 **P37** – 1123/70/80 £69
P38 – P1624/95; P2624 £129

Buffers

P12 4K Buffer Board for KX-P1081 £55
P14 32K Buffer P1123/24/70/80 P1540/92/95; P1624/54/95 £16

Serial Interfaces

P19 for P1123/24/24i/70/80/1624/54/95/2624 £49

Original Panasonic Ribbons

Guaranteed to last 3 million characters

P110 for KX-P1081, 1592 & 1595 £6
P115 for KX-P1180 £7 **P145** for KX-P1124 £7
P140 for KX-P1540 £8 **P155** for KX-P1624 £8
Colour Ribbons for KX-P1081, 1592 & 1595
Brown, Blue or Red £9 each
P150C Colour for P2123/2180 £15

Citizen Printers

- 120D Plus £100
- 224 £185
- PN-48 £209
- Swift 9 £134
- Swift 24E# £234
- Swift 24X £299
- PN48 Ribbon £4

\# FREE Colour Option with Swift 24E
\+ FREE 2 years Parts and Labour warranty on all Citizen Printers

- Swift 9 Colour Option £19
- Swift 24 Colour Option £29
- Swift 24 Ribbons Black £4 Colour £13
- Citizen/Archimedes Colour Printer Driver £15

Integrex Colour Jet

- Colour Jet 132 Printer £449
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21
- Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123
- Colour Jet 2000 £POA

Star Printers

- LC15 £173
- LC20 £100
- LC24-15 £240
- LC24-20 £169
- LC24-200 £164
- LC24-200 Colour £203
- LC200 Colour £143
- SJ48 Inkjet £174
- XB24-200 Colour £295
- XB24-250 Colour £355
- XB24 Colour kit £29
- ZA200 Colour £234
- ZA250 £297
- Star/Archimedes Colour Printer Driver £15

Cut Sheet Feeder

LC10/200/24-10 £65 LC15/LC24-15 £125
XB24-10 £80 XB24-15 £139

Serial Interfaces

8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £52

Buffers

32K Ram Card for LC/XB24-10; 15; LC200 £55

Ribbons

LC10; LC10-II; LC15	Black £4;	Colour £6
LC-200; LC24-200	Black £5;	Colour £12
XB24-10; XB24-15	Black £5;	Colour £12

Laser Printers

All Laser Printers include 12 months On-site maintenance

Brother HL-4	4ppm	£575
Brother HL4-V	4ppm	£675
Brother HL4-PS Postscript	4ppm	£1045
Brother HL8-V	8ppm	£995
Canon LBP4LITE	4ppm	£529
Canon LBP4+ 1.5M RAM	4ppm	£685
Canon LBP-8 III	8ppm	£970
Canon LBP-8III Plus	8ppm	£965
Epson EPL4100	6ppm	£550
Epson EPL7500	6ppm	£1150
Epson EPL8100	10ppm	£965
HP Laserjet IIP+	4ppm	£549
HP Laserjet III	8ppm	£1015
HP Laserjet IIID	8ppm	£1499
HP Laserjet IIIP	4ppm	£705
HP Laserjet IIIsi	16ppm	£2525
NEC Silentwriter S62P P/script	6ppm	£1089
NEC Silentwriter 266	8ppm	£675
NEC Silentwriter 290P P/script	8ppm	£1389
Panasonic KX-P4420	8ppm*	£620
Panasonic KX-P4450i*	11ppm*	£925
Panasonic KX-4455 Postscript	11ppm*	£1450
Panasonic KX-P4430 Satin Print*		£685
Star LP-8 III 2	8ppm	£1249
Star LP-8 III	8ppm	£910
Star LP-8 Star(post)script	8ppm	£1140
Star LP-4	4ppm	£565
Star LP-4 Mk 3	4ppm	£659
Star LP-4PS Postscript	4ppm	£779

* Now with 2 years On-site warranty

Laser Toners

Canon 2, 3 & 4	£46	Star LP-8	£56
Epson GQ	£13	KX-P4420/50	£19
EPL 4100	£59	Laserjet HP IIP & IIIP	£42
EPL7100	£82	Laserjet II/D, III/D	£48
EPL7500	£99	Qume Crystal (3)	£58

Laser RAM Upgrades

IIP; III/P 1Mb	£51	EPL7100 256K	£39
IIP; III/P 2Mb	£88	GQ5000 512K	£42
IIP; III/P 4Mb	£135	KX4420/50 1M	£75
II & IID 1Mb	£64	KX4420/50 2M	£115
II & IID 2Mb	£99	KX4420/50 4M	£195
II & IID 4Mb	£146	Star LP8 1M	£139
Canon LBP4 1M	£105	Star LP8 2M	£275
Canon LBP8 2M	£125		

Laser Drum & Developer

- Epson Drum GQ5000 £93 EPL7100 £129
- Panasonic 4420 Drum £60 Developer £59
- Panasonic 4450 Drum £93 Developer £80
- Qume Drum £76 Developer £56

Jetpage Postscript Cartridge

- HP IIP/III £225 IID & IIID £227

Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript £399
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet various Font cartridges from £45

Hewlett-Packard Printers

# Desk Jet 500	£285	Paintjet XL 300	£1920
Desk Jet 500 Col.	£449	*Quiet Jet Plus	£415
*Paint Jet Colour	£525	*HP Think Jet	£265
*Paintjet XL	£1225		

3 years extended Parts & Labour warranty £49
* Price includes 12 months on-site warranty

- DeskJet 500 Cart. Black **£15;** Colour **£27**
- Paintjet Cartridges Black **£19;** Colour **£23**
- Desk Jet 500 256K RAM cartridge **£99**
- HP Epson FX Emulation Cartridge for Desk Jet **£59**
- DJ 500 High Capacity Black Cartridge **£21**

Plug In Font Cartridges for DJ 500

- 22706B – Prestige, Elite, Line Draw fonts **£55**
- 22706C Letter Gothic & HP Line Draw fonts **£56**
- 22707P – Proprint Emulation Cartridge **£57**
- Desk Jet Unlimited (Book No VAT) **£19.75**

Canon Bubblejet Printers

	Printer	CSF	D'ble Bin	Ink Cart
BJ10EX	£183	£43	–	£16
BJ20	£265	–	–	–
BJ300*	£289	£88	£65	£12
BJ330*	£380	£110	£79	£12
BJC800C	£1525	–	–	–

- Spare Battery pack for BJ10E **£33**
- BJ10EX – Archi Turbo Driver **£42**

NEC Pinwriter Printers

• P20	£180	• P70	£419
• P30	£240	• P90	£635
• P60	£325		

- P60/70 Colour Option Kit **£59**
- Ribbons Black for P20/30 **£6** for P60/70/90 **£7**
- Ribbons for P60/70/90 Black **£9** Colour **£13.50**

Cut Sheet Feeders

P20 **£59;** P30 **£85;** P60 **£89;** P70/90 **£80**

Epson Printers

DFX5000	£1079	LQ1060 Colour	£595
DFX8000	£1960	LQ1070	£313
FX850	£264	LQ1170	£435
FX1050	£336	LQ2550+	£675
LQ100	£159	LX400	£101
LQ200	£162	LX850+	£140
LQ450	£165	LX1050	£206
LQ570	£205	SQ850	£432
LQ860 Colour	£444	SQ1170	£589
LQ870	£362	SQ2550	£625

Cut Sheet Feeders for

LQ570, LQ870 **£47**
LX400/850/LQ200/400/450/500/550
LQ1010/1070/1170 **£72**
LX1050 **£115** FX850/LQ860 **£128**
FX1050/LQ1060/SQ850 **£155**
LQ2550 **£299** SQ2550 **£210**

Tractor Feed for

LQ800 **£44;** LQ850/FX850 **£69;** LQ1050/ FX1050 **£85;** LQ2500 **£90;** LQ2550 **£90.**

Accessories

- EX800/1000 Colour Option **£45**
- EX800/1000 Colour Ribbon **£14**
- LQ2500 Colour Option **£65**
- Multifont Card for LQ550/850/1050 **£95**

Epson Printer Interfaces

RS232 **£28** RS232 + 2K Buffer **£52**

Printer Leads

BBC Centronics 4' long	£5
BBC Centronics 6' extra long	£7
Compact's Special Centronics Lead	£7
Nimbus Centronics Lead	£6
IBM/Archimedes Parallel Lead 6'	£4
IBM/Archimedes Parallel Lead 5 metres	£10
IBM/Archimedes Parallel Lead 10 metres	£15
Double Ended 36 way Centronics Lead 4'	£7
Double Ended 36 way Centronics Lead 6'	£9
MSX Centronics Parallel Lead 4'	£12
RS232 Leads (Various)	P.O.A.
IBM Keyboard extension lead coiled	£5

Fujitsu Printers

B-100	£205	DL1100 Col	£267
B-200	£299	DL1200	£363
DL-900	£181	DL3600	£508
DL1100	£217	VM800	£1036

Ribbons

DL900/1100/1200	Mono	£5	Col.	£11
DL3600	Mono	£6	Col.	£12

B-100/200 Ink Cartridge **£15**

Plotters

• HP7440AU	£925	• HP7475AU	£925

Roland Plotters

• DXY1100	£490	• DXY1200	£620
• DXY1300	£825	• DXY2500	£2345
• DXY3500	£2955	• Sketchmate	£310

- Roland plotter Pens, Fibre tip **£7.50**

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold Paper **£7**
- 2,000 Sheets 9.5" x 11" Fanfold Paper **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold Paper **£9**
- 2,000 Sheets 15" x 11" Fanfold Paper **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**
- Teleprinter Roll (Econo paper) **£4**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£6.00
1,000 90 x 36mm (Twin Row)	£6.25
1,000 90 x 49mm (Twin Row)	£7.50
1,000 102 x 36mm (Twin Row)	£6.75

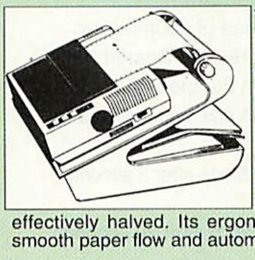
Laser Printer Labels on A4 Sheets

3750 70 x 29mm (3 Rows)	£15.50
3000 70 x 37mm (3 Rows)	£15.25
2625 70 x 42mm (3 Rows)	£15.00

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC Micro	–	£3.50
BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£2.75	£4.50
DMP2000	£2.75	£4.75
DMP4000	£3.75	£4.85
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£4.00	–
LX80/86/800/850	£2.75	£4.50
LX400	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic KX1080/81	£3.25	£4.75
Panasonic KX-P1124	£7.00	£5.00
Star LC24-10	£2.95	£6.00
Olivetti Ink Jet Cartridges (set of 4)	£6	

Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)
132 Column version £29(carr. £4)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Type

Connects	Serial	Parallel
• 2 to 1	£10	£11
• 3 to 1	£13	£14
• 4 to 1	£16	£17

Professional Type

Connects	Serial	Parallel
• 2 to 1	£17	£18
• 3 to 1	£22	£25
• 5 to 1	£34	£38

Cables extra at £6 each

2 Way Compact Printer Switch

A handy 2 way printer switch can be attached to the micro or monitor for ease of use.
• Centronics **£18;** • Serial **£17**
(Cables extra at £6 each)

Auto Printer Sharer Switch

Connects	Serial	Parallel
2 to 1	£40	£45
4 to 1	£62	£49
8 to 1	–	£89

256k Multi Spooler

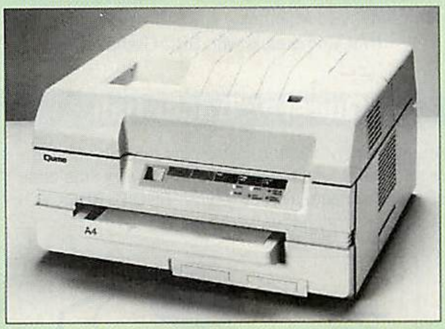
These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

• 2 In/2 out	£135	• 4 In/2 out	£169
• 8 In/1 out	£199		

Compact Converter Units

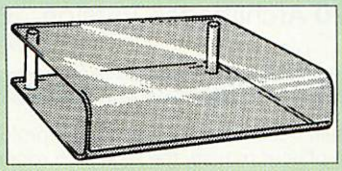
Serial to Parallel **£36** Parallel to Serial **£37**

Laser Direct



- Special High Res Card 600 DPI for Canon LPB 4 & LPB 8 Laser Printers **£315**
- LPB 4 Printer plus High Res Card **£875**
- LPB 8III Printer plus High Res Card **£1275**

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version	**£16** (carr £3)
136 Column version	**£20** (carr £4)

Continued→ → → → → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint £59
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £89
- Quest Mouse III only £30
- Quest Paint Software only £34
- Quest Font Disc (22 Text Fonts) £15
- Quest Mouse Mat (Red or Blue or Green please specify) £3
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18

  (P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

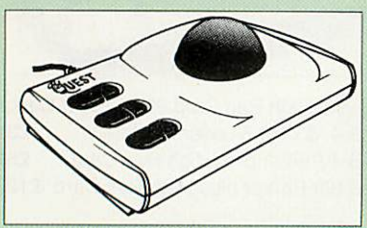
ConQuest

Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

ConQuest ROM Package £30
(Price includes software in ROM and a comprehensive Manual).
(Not Compatible with BBC Compact)

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version **£25**
QT-20 Archimedes Version **£26**

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose £3

Mk II Light Pen

Ideal for BBC B and Master. Price includes software on disc and operating manual £17

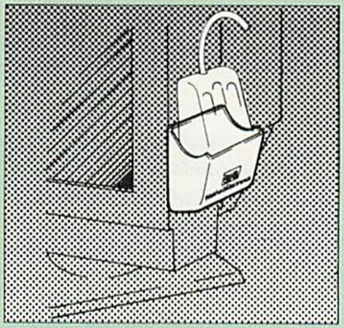
Mk III AMX MOUSE

- **AMX Mouse plus Super Art £54**

  (Please specify for BBC, Master or Compact)

- AMX MOUSE ONLY £29
- AMX SUPERART Package £29
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £25
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £13
- AMX DESIGN (ROM) £34
- AMX XAM Educational £15
- AMX EXTRA EXTRA £16
- MOUSE MAT £3

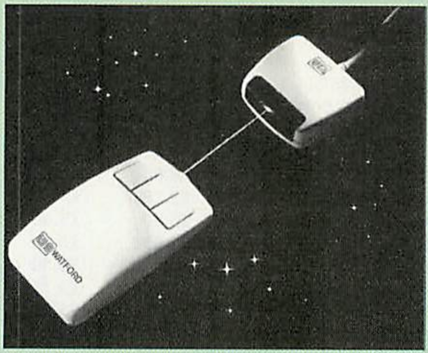
WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Archi Cordless Mouse

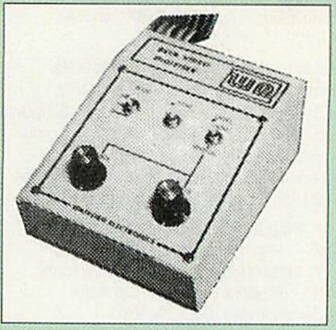


Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

Price £59

BEEB VIDEO DIGITISER



"Test Bureau Approved for Use in Education"

Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro. This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket. The software supplied includes a sophisticated, fast screen dump routine.
Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem. The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

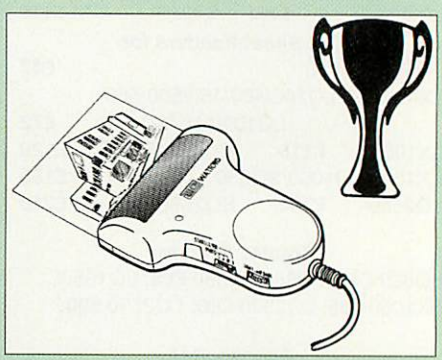
£99

(BBC B+ and Master compatible, except Master with Econet)

(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual)

Beeb Hand Scanner

Hand-held Scanner for the BBC Micro



Watford Beeb HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs!

The HandScan plugs directly into the 1MHz bus on the BBC while a comprehensive set of utilities provided by the sophisticated ROM firmware. The scanner has a resolution of either 100 DPI or 200 DPI when accuracy is essential. Pictures as wide as 4" may be scanned in mode 0 and various types of dithering may be selected to simulate the grey levels of a scanned picture.

All necessary software has been included in the firmware to allow the scanner to read images directly into our Wapping Editor with little more than the click of the mouse. The digitised picture may then be incorporated into your magazine, newsletter, report or any other document.

Beeb HandScan & Firmware **£99**



Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Included with the system is a utility disc containing several high quality fonts, various utilities and a ROM image of a Support ROM. A comprehensive 100 page manual completes the package. The Support ROM contains routines to allow an area to be rotated to any angle or distorted to any four-sided shape. Also included are facilities to draw ellipses at any angle and sectors, segments and arcs (in Master or BBC B with Acorn GXR). Another of the features of the Support ROM is a 'Turbo DFS' which gives DFS access times comparable with those of ADFS.

Page Layout Section

The Wapping Editor may be used to create pages of any size from an A6 to a full A3 page. If none of the eight default page types suit your purpose, the stand-alone page creation program may be used to create pages to your own requirements. By using proportionally spaced fonts and genuine microspacing it is possible to print over 150 characters across an A4 page. A unique feature of the Wapping Editor is the 'A5 x 2' page size allowing two A5 pages to be printed side by side onto a single A4 sheet.

The graphics module incorporates the facilities like: pencil, brush, airbrush, polygon, circle, eclipse, fill, cut & paste, etc.

Text may be typeset, either justified or unjustified, in any font anywhere on the page. Simply select which font and text document you wish to use, and pull out a rectangle on the page where you want the text to be – it's as simple as that! Multiple columns may be printed just as easily and a special 'expand' feature may be used to expand the microspacing so that the document exactly fits the space defined.

Word-Processor

The integral word processor is the ideal tool for producing your text documents, although text can of course be read in from any of the other popular word processors such as View, Wordwise etc.

The Font Editor

The font editor module will allow you to design your own typefaces or to modify the ones provided on the utility disc. This sophisticated editor has numerous functions designed to take the tedium and frustration out of producing good looking, well balanced fonts. Each character may be individually proportionally spaced and characters of any size up to 16 x 16 pixels may be defined.
Pictures may also be 'grabbed' from a video source by using the Watford BEEB Video Digitiser.

Wapping Editor Software Pack	**£59**
Wapping Editor plus Mouse	**£79**

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc.
Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out.

Music writing symbols in the form of pattern and brush for quick production of manuscripts are included together with staves.

There are two prepared hi-res pages layed out for printing labels, both single and double width. Ready made label designs are included but these can be easily replaced with your own designs.

A Mode 0 screen dump routine is also included. To pack such a large amount of data onto the discs the screens have been compressed and routines to compress and expand Mode 0 screens are included on both discs. Using the packing routine you can archive large numbers of screens onto a single disc.

£15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are three Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions.

£12

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only).

£13

Archi A4 Scanner



This most advanced Archi A4 image scanner is supplied complete with ROM based podule software. Features provided include facilities for zooming in on an image and inverting the image in X and Y directions, saving and printing of the sprite created. Interactive help is supplied using the !HELP application on the Acorn applications discs.
The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.
Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.
All these features and facilities combine to make the Archi Page Scanner the fast and convenient way in which to add that extra impact, interest and clarity to documents, reports, instruction sheets, manuals, news letters, etc., from your Archimedes DTP package.

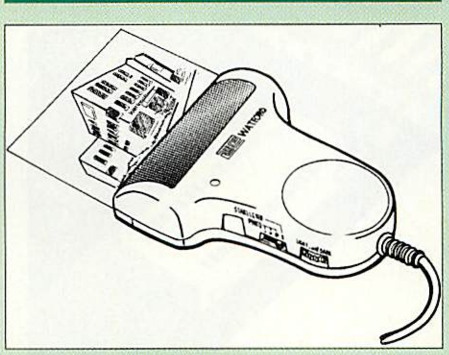
New Low Prices:

Archi A4 Scanner	£269
Sheet Feeder for above	£75
Scanner + Sheet Feeder	£359

Computer Concept Scanlight

• Scan-Light A4	£275
• Scan-Light A4 + Sheet Feeder	£368
• Scan-Light Junior mono	£130
• Scan-Light Junior 256	£197

Archi Mk II Hand Scanner



Watford Electronics is now able to offer a complete hand held scanning package, possibly the most essential addition to any desk top publishing system, for only £119. The package includes the most comprehensive utility software available for the Archimedes, a high quality hand held scanner, and all necessary documentation to get you going straight away.

SCANNER

The scanner is capable of scanning up to an amazing 400 dots per inch (DPI)! The scanning area is 4" wide, and the height is only limited by the maximum amount of memory available. The dot resolution may be switched to 100, 200, 300 or the maximum 400 dpi. One of four operating modes may be selected offering either pure monochrome scanning, or one of three grey level modes. The grey level modes use different size dither patterns to represent up to 16 shades of grey. There is also a dial to allow the "brightness" to be adjusted over a wide range, in order to optimise the quality for any specific image. The scanner interface is a standard, single width, expansion card (podule) which plugs into the Archimedes' backplane. The socket on the rear panel connects the scanner by 1.8 metres of cable.

SCANNER SOFTWARE

Full use is made of the windowing and the multi-tasking facilities of RiscOS. The software is supplied in a 64Kbyte ROM located on the interface board. The scanner appears as a small icon on the desktop icon bar, and the software is retrieved from the ROM simply by clicking on that icon. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. The other facilities included in the software are.

Cropping and scaling to any size including stretching and squashing in X and Y direction separately.

Colour tinting.
X and Y flip.

Edge detection which turns solid objects into outlines.

Selective directional copying which allows features (i.e. lines or text) to be made thicker or thinner.

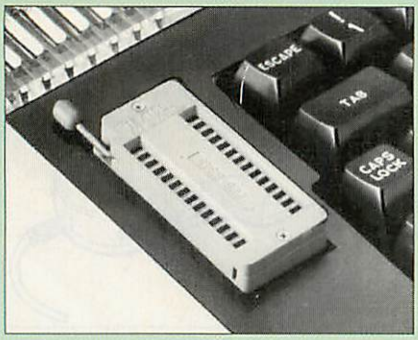
Scanned images may be saved as sprite files or transferred directly into other RiscOS applications (DTP, Draw, Paint) simply by dragging the sprite file into the application's window. Sprites may also be generated using anti-aliasing. This greatly improves picture quality and is particularly effective when scanning material with a range of grey tones, such as photographs. Images can be printed on any printer that is supported by a RiscOS printer driver, with optional settings for portrait or landscape modes, image scale and positioning. Images are printed using the full resolution of the printer and are not limited to the screen resolution.

On-screen help is provided via the RiscOS interactive help facility. Calls are also provided in the ROM for users wishing to write their own software, incorporating the use of the scanner.

AHS-4 Archi 300/400 Version	**£119**
AHS-3 Archi A3000 Version	**£129**

Continued→ → → → → → → → → →

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without opening the lid. The ZERO INSERTION FORCE (ZIF) socket is located into the ROM Cartridge's position.

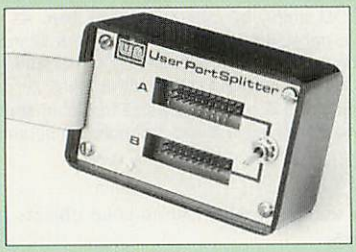
- Very simple to install. NO SOLDERING required. The ZIF eliminates the possibility of damage to your ROM pins when inserting & extracting.
- The low profile of the socket allows unrestricted access to the Keyboard.
- We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.
- BBC, B and B+ compatible. **£18**

ROM Cartridges for the BBC Master

Will also accept the new larger Piggy Back ROMs like: Interword, Interbase, Quest, Conquest, etc

Twin **£8**; Quad **£13**

User Port Splitter Unit



Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination

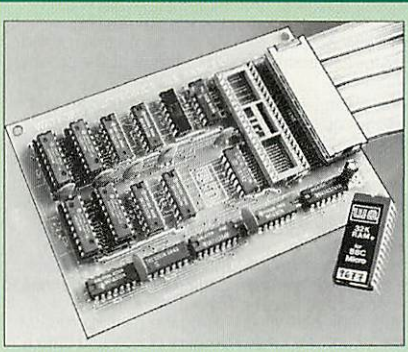
Excellent Value at **£22**

Aries B-488 IEEE-488 Interface Unit

The Aries-B488 is an interface unit to enable the BBC micro to control and monitor IEEE-488 bus systems. The IEEE-488 bus (also known as the 'GPIB or 'HP IB') is the standard method of interconnecting programmable laboratory instruments and control equipment. Using the B488, up to 15 devices may be connected in a single high-speed data network.

£238

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- While word processing, you don't wait for a slow printer, type in text while printing and save on expensive printer buffers.
- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.
- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20k of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28k of program space.
- Use the full 32k or the bottom 12K of the expansion RAM as a printer Buffer. (P.S. Only 12K printer buffer can be used with Wordwise & WW+, due to the way they are written).
- Unique facility to turn ROMs off and on again.

Only £54

(Price includes a comprehensive manual and the ROM)

- **ARIES B-32 Shadow RAM Card £55**

Commander Joystick



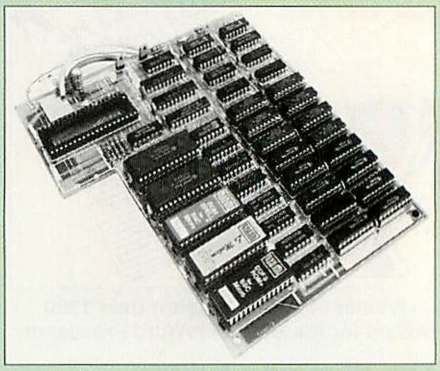
Watford Electronics' new Commander Joystick for the BBC B and Master 128K has a unique dual mode of operation giving selective free floating or self centring fully variable control in both X and Y axis directions. Commander is particularly good for flight simulation and drawing programs.

Features:

- Direct connection to BBC Analogue input port – no interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Price: £15

ROM/RAM Card



- NO SOLDERING required to fit the board.
- Fully buffered for peace of mind.
- Compatible with BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM.
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- FREE utilities disc packed with software.
- Large printer buffer.
- UNIQUE fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROMSPELL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

PRICES:

- ROM/RAM card with 32k DRAM **£42**
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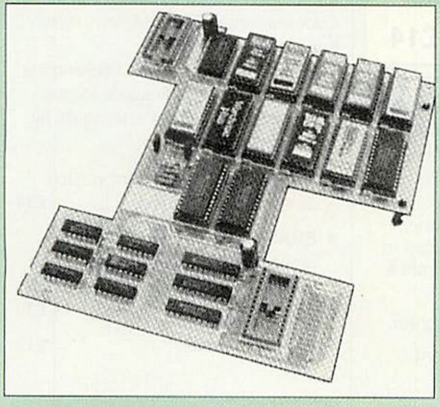
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Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128 **£25**

Solderless Sideways ROM Socket Board



The key features of this no fuss, easy to install card are:

- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Very low power consumption.
- Compatible with Torch, DDFS, RAM Card, 2nd Processor, etc.
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish") allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £35
Battery Backup fitted **£39**
Battery Backup only **£3**
16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

Only: £8

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- Bookbinder **£43**
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to 3 pin DIN Plug + 1 Jack Plug	**£2.50**
to 7 pin DIN Plug	**£3.00**
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Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00;** Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
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RS423 (5 pin Domino)	70p	80p
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Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

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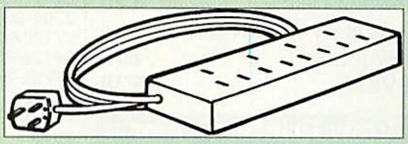
Watford POWER DUCK **£8**

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Protection for only **£8.50**

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Supplied wired up with mains plug ready for use.
Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals.

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We are giving away absolutely **FREE,** the superb Word-Aid ROM worth £24, with every WORDWISE PLUS package bought from us.

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This advance utilities ROM extends the power of your Wordwise plus ROM.

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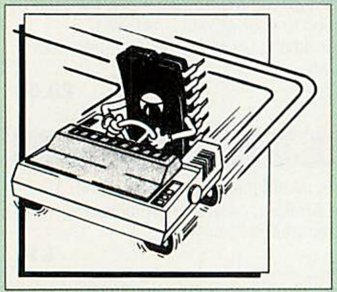
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(N.B. Word Aid requires a Disc interface in your Micro)

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Viewplot Disc	£20
(Please specify for Master 128 or Compact)	
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View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

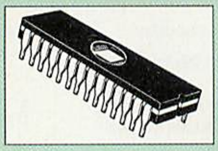
Price: Only £29

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for BBC B & B+	£12
for BBC Master	£14
for BBC Compact	£16

(When ordering please specify for which Micro & 40 or 80T Disc)

Assorted ROMS



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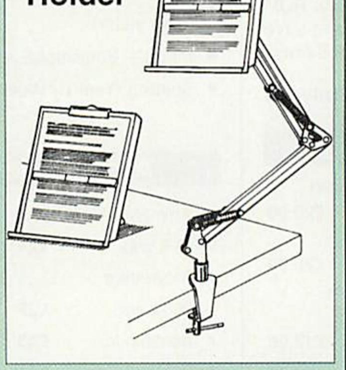
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Kit 14 – 1 each, 3.5" & 5.25" Cleaning Disk, 2 cleaning pads; Drive head cleaning fluid; 20pcs general purpose wipes; Anti-static screen cleaning fluid; General surface cleaning fluid and a transparent plastic case which can hold ten 5.25" Disks when empty. **£10**

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'ACORN TO PC' enables you to change over painlessly. It shows clearly and quicly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way – from Acorn to MS-DOS, or from MS-DOS to Acorn.

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'ACORN TO PC' is written clearly and concisely by Dr. John Lockley, who has wide experience of writing and broadcasting. He is currently appearing as a regular contributor on Radio 5, and is co-author of 'The Complete BBC Computer User Handbook'.

Price: £12.95 (No VAT)

The Complete BBC Computer User Handbook

If you own a BBC B, B+, Electron, Master 128 or Master Compact, or Archimedes, then this is the book for you. It shows how to get the best from your machine, and how to make it work for you. The general style and level of presentation means that both the expert and beginner alike will feel comfortable with the quality and quantity of the material.

Subjects covered include the general use of computers, hardware design and peripheral devices like printers, disc drives, etc, and Networking. Programming hints and tips and various disciplines for making a better program are discussed in some detail, including debugging of specific errors. Standard programs are covered, such as wordprocessors, spreadsheets, databases, graphics, communications, etc., which brings you neatly on to the subject of using computers in the office or at work – even giving advice on writing and marketing your own programs.

A book you will enjoy to use as a reference, or read from cover to cover, over and over.

Only: **£14.95** (No VAT)

The Complete Mouse User Guide to BBC Micro

This manual has been written to reveal the secrets of the mouse. It explains all the principles required by the hardware and associated software, and also example listings for inclusion into custom programs. The manual first details the basic principles of the mouse and a simple program which uses these principles. This information should be adequate for most applications. However, it is possible to improve the performance of the mouse by expanding on the principles already used in the software. This is again fully explained and an example program given.

It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included.

Price £5.95 (No VAT)

Example programs on Disc £4.95

Beeb PC (BASIC)

Designed for program authors to convert BBC programs to run on IBM PCs.

Price: £38

Beeb DOS 3.0

(Now reads Archimedes Discs)

Beeb DOS is a collection of utilities which run on the PCs and enable it to read and write information on BBC Discs.

Price: £39

The Epson RX/FX/KAGA Printer Commands Revealed Handbook

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out? Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON FX-KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English, how to use and make the most of your KP810, PW1080A or any other Epson FX80 compatible printers like Panasonic KX-P1080/1, etc., with the BBC Micro, both from Basic and Wordwise.

£5.95 (No VAT)

Continued→ → → → → →

Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.
Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine. An optional 20Mb or 40Mb hard disc can be supplied on the podule expansion card itself, with its fast transfer rate and power saving modes the drive is ideal for storing commonly used software such as the !Fonts application.
A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.
By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Built in Non Volatile RAM to hold configuration
- LED activity indicator
- 37 way D type socket for external drives
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

Prices

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£215
ADA 0530	100Mb	16mS	£295
ADA 0570	200Mb	15mS	£479
ADA 0580	330Mb	15mS	£849

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

For A3000 users an additional external Case and PSU will be required.

AAA 0300 External Case & PSU for A3000 £85

Internal Hard Disc Drives for A3000

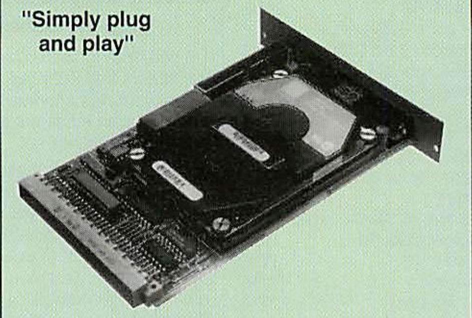
State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0700	21Mb	23mS	£185
ADA 0770	30Mb	19mS	£285
ADA 0720	44Mb	19mS	£349
ADA 0750	60MB	18MS	£399
ADA 0730	89Mb	18mS	£619

Supplied ready assembled. No soldering required. Simply plug into the alloted space.

Archi IDE Hard Cards

"Simply plug and play"



Watford's NEW low cost, high performance revolutionary IDE Hard Cards for the A300 and A400 series Archimedes are unbelievably easy to install – you simply slot one into any vacant podule backplane slot in the rear of your computer. These stunningly engineered, light weight but fast, 2.5" miniature hard drives are mounted onto the professionally designed cards, and are supplied with the fully Acorn-conformant IDE Filing System ready installed and ready to run. A novel feature of the hard cards is that they can be easily removed and transported to another Archimedes, for example to make a hard disc backup, or to transfer saved files from work to home etc. Security of files on the hard disc is ensured by our unique security password lock, which allows files to be read only, but not overwritten or deleted – ideal for use in school applications where the integrity of your master software needs to be retained.

ADA 0650	21Mb	23mS	£199
ADA 0800	30Mb	19mS	£295
ADA 0660	44Mb	28mS	£359
ADA 0810	60Mb	18mS	£409
ADA 0670	89Mb	18mS	£629

(Can be used as a Removable Hard Drive)

NEW

Archimedes A300/A400 SCSI Hard Disc Offer
(while stocks last)

100MB Hard Disc Upgrade complete with Controller card, Cables, Formatter and Manuals

RRP: £999

Offer Price: £339

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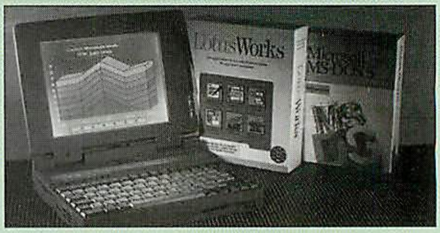
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Aries 25Mhz NB36X25

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● I bought a new A5000 LC+HD from an authorised dealer (Leeds) for £1585 inc VAT. After using PC 386DX/ windows, A5000 is fantastic! Free Elite voucher for prospective Acorn buyer! Contact G. Randall. Tel: (0423) 520850

● Master compact, mono monitor, Olivetti daisywheel printer – £200. Contact Kate, London. Tel: 071-284 1256

● Archimedes A3000/A310 computer, colour monitor, Learning Curve, business and games software. Mint condition, absolute bargain – £650. Contact A Alan, Leicester. Tel: (0831) 367086

● Master compact colour system, twin 3.5in drives, overview package, Master Rom, complete with 24 Pin printer, manuals, various software – £400. Contact Neil, Stoke-on-Trent. Tel: (0782) 321985

● Acorn colour monitor, new with A3000 June 1990, not used since February. Upgrade to Hi-Res monitor – £96. Contact Phil Coughlin, London. Tel: 071-790 7994

● A3000, 1Mb to 4Mb Ram upgrade – £85. Contact A Bradbury, Stoke-on-Trent. Tel: (0782) 314053 after 7.30pm weekdays

● BBC Master 128, RGB colour monitor, Epson printer, Twin 40/80 track drives, software on Rom and disc, joystick, mouse, games etc – £600 ono. Contact Mrs P Dye, Southampton. Tel: (0703) 893243

● 5.25in 40/80T disc drive and interface for A300/A400 – £75, serial port joystick interface and joystick – £30, Euclid – £25, Genesis Plus – £30, Lemmings – £10, Pacmania – £10, Cartoon Line – £10. Contact Mr D Locke, London. Tel: 071-416 7770 ext 448

● Archimedes A3000 2Mb Ram computer, Acorn colour monitor, 1st Word, PC Emulator, Lemmings, Pacmania, Zarch, Hangman etc. Still 2 months warranty – £670. Contact Makhan Rai, Derby. Tel: (0332) 281540

● Teletex adapter for Electron Plus One with manual – £70, P/Pack, Master Break for Arc 3.5in disc – £10. Contact M Surendra, Middlesex. Tel: 081-903 0904

● Master 128, single 40/80 DSDD drive, Amber monitor, teletext adapter, Pascal and utilities cartridges, all the manuals, loads of software – £400 fully boxed, VGC. Contact Mark Lancaster, Cheshire. Tel: (061) 491 3942

● Archimedes A5000 computer, 40Mb hard disc, 2Mb Ram with free software. Brand new, unused unwanted present cost £1761. Will accept – £1650. Contact Roger, Worsley. Tel: (061) 499 9845 evenings

● Wanted: Archimedes games especially Manchester United, Jahangir Khan's squash and Slappit. Contact James Baker, Ealing. Tel: 081-567 4643 after 7pm

● Archimedes software, Hearsay II – £50, Hard disc Companion – £30, Compression – £35, Lemmings – £18, Impression Business Supplement – £40. Contact John Crabtree, Dartmouth. Tel: (0803) 833755

● The Electron User Group! For details send S.A.E. to: Will Watts, E.U.G.,134 Great Knightleys, Basildon, Essex SS15 5HQ

● BBC B, Interword, 40/80 Cumana disc drive, Business quality green monitor, Epson MX100 printer, manuals, books and discs – £200. Contact Mr R York, Buxton. Tel: (0298) 70768

● Ovation version 1.25S original discs and manuals – £80. Contact Keith, Sunbury. Tel: (0932) 788322

● BBC B micro with 40/80 disc drive, 2 joysticks, mouse, manuals, books, excellent condition – £110. Contact R.F. Burke, Cambridgeshire. Tel: (0945) 65940

● BBC B with ATPL sideways expansion, Trackerball, Torch Z80 second processor, two 80 and one 40 track disc drives with PSU, software. Contact John Baraclough, Glasgow. Tel: (0360) 50951

● BBC B, cassette recorder, lightpen, joysticks, 25 games including Elite, instruction and programming manuals – £100. Contact Mr M Jennings, Fleet. Tel: (0252) 629338

● Master 128 computer, clean as new – £230 inc p+p. Canon BJ 10ex printer with Archimedes driver – £200 ono Archimedes Rom podule – £40. Contact A Fairclough, Merseyside. Tel: (051) 606 0289

● Electron, AP1, AP2, AP3, Lisp, joysticks, manuals, magazines, books, software, many games, Mini office etc, all good condition – £130 the lot o.n.o. will split. Contact A Piper, Hampshire. Tel: (0329) 281930 evenings

● PRMs – £50, Autosketch, SV-Solidcad, SuperPlot, WorraPlot all for – £50, Arcscan plus Risc user manuals Jun 89/ Mar 92, home accounts, HD companion, games – £50. Contact Mr R Glass, Huntingdon. Tel: (0480) 434184

● BBC B Issue 7, Solidisk DDFS, Econet, many application Roms, Cumana single disc drive, dust covers, manuals – £250. Contact A King, Weymouth. Tel: (0305) 779603

● BBC B+ sale following Upgrade, Wapping Editor. Quest Paint, Autodial Modem with Rom, double sided 40/80 drive, games, lightpen, boxed – offers. Contact Miles Carter, Southampton. Tel: (0703) 260088

● Archimedes A310 colour monitor, 20Mb hard disc, sealed new s/w, games, 3Mb PD s/w, boxed with manuals, dust covers – £700 ono contact Mr R Collins, Worthing. Tel: (0903) 690031

● A3000, 40Mb hard disc, 4Mb Ram, colour monitor, SCSI interface, monitor stand, manuals, software – £850. Contact M Gidey, Northants. Tel: (0933) 55273

● A3000 Learning Curve, colour monitor and stand, 2Mb Ram, lots of software and games, excellent condition – £695 ono. Contact Mr A Greenland, Newcastle upon Tyne. Tel: (0661) 25161

● 46 issues of *BAU* (85-89) – £20 (£10 carriage), 34 issues of Micro User (85-89) – £15 (£9 carriage). Contact Mr M Graham, Middlesex. Tel: 081-847 0364

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ARCterm 7 £68

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A5000 IDE drives

These drives fit in the second floppy slot, in addition to the existing 40Mb drive. Transfer rate is 1050k/s.

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Complete systems. MEMC1a/backplane required. Typical transfer rates are 700k/s for 40Mb and 900k/s for 100Mb.

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We supply Morley cards - the fastest on the market. Typical transfer rates are 1000k/s for Quantums and 2150k/s for Fujitsu. All drives are cached. Add £50 for a cached SCSI card if you require one.

A300/400 int 50Mb 17/9ms 2yr Quantum	£319
A300/400 int 100Mb 17/9ms 2yr Quantum	£429
A300/400 int 200Mb 17/9ms 2yr Quantum	£699
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(Add £70 for A3000/5000 external systems)

20Mb Floptical Drive

Our floptical drive will read and write E format disks (F format with RISC OS 3) as well as native 20Mb. FLOPFS is supplied with the external drive which works with most SCSI cards (or add £100 for a Morley card). The A5000 internal comes with our own SCSI interface designed specifically for the floptical drive, plugging into the Econet port - using no slots. Transfer rate is 100k/s typically & 80ms seek time.

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- IBM keyboard/mouse interface - 100% compatible.
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All disk systems come tested and formatted with all cables. Delivery on hardware £10+VAT. Education is entitled to a 5% discount on all products.

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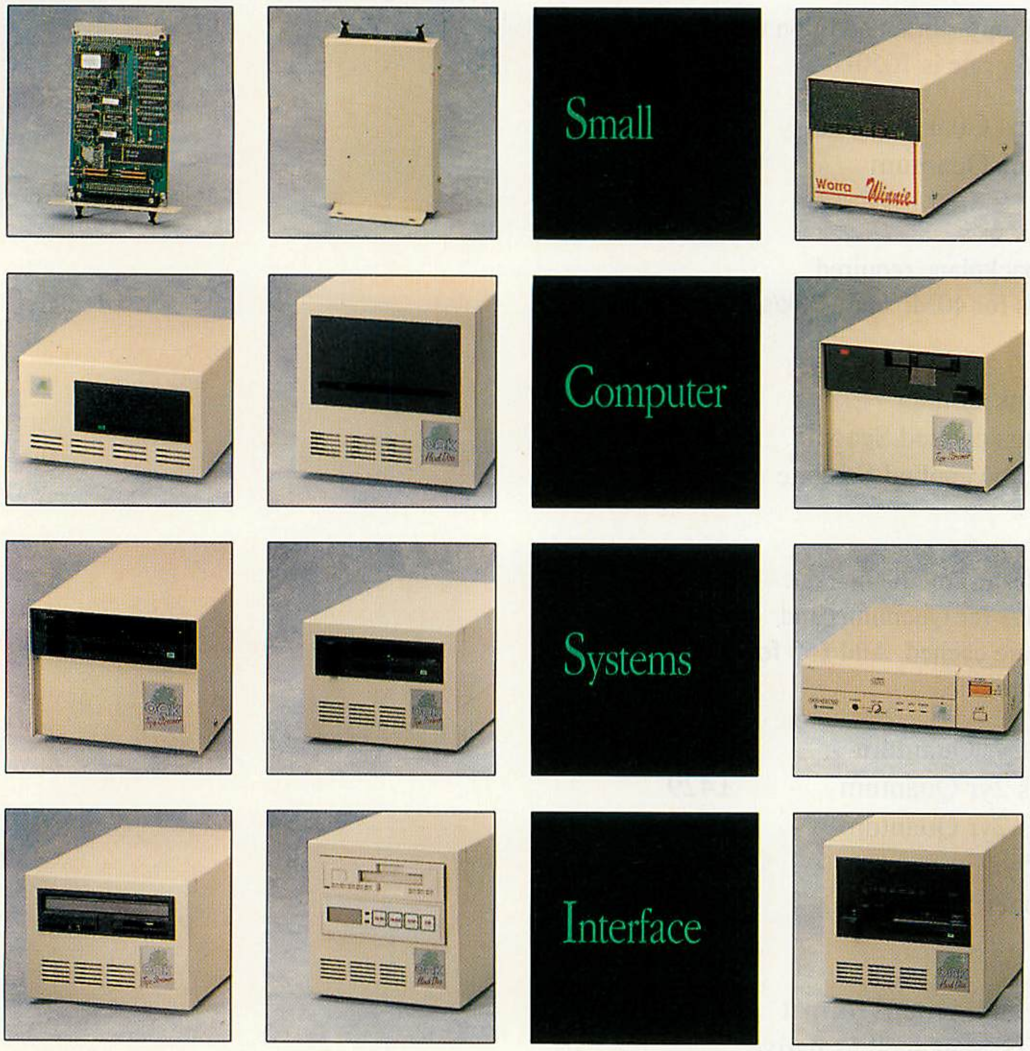
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50 Mb	£489.00
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680 Mb	£1795.00

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60 Mb	£595.00
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1 Gb	£1750.00

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560 Mb	£3650.00

CD ROM Drives

Worra CD	£299.00
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Prices shown include SCSI interface (except CDROMs which require SCSI card and CDFS upgrade).

Always state computer type when ordering

...it's got to be one of ours

The new Worra CD ROM drive offers a low cost entry into the world of multimedia with performance comparable to similar drives. The High Speed CD ROM drive offers the highest possible performance and is better able to cope with more demanding applications, such as Acorn 'Replay' sequences, than cheaper drives.

Each hard disc comes complete with the following FREE software:
Genesis, Euclid, Disc Tree, RISC OS Companion, Worra Battle

Prices exclude £10.00 p&p and VAT

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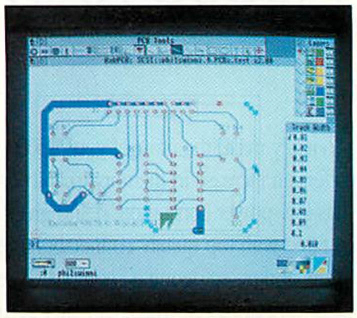
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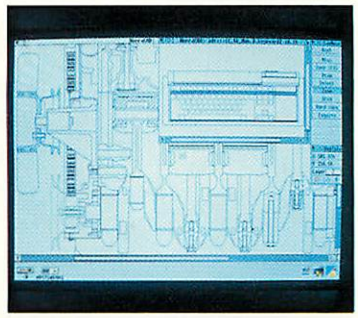
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Oak PCB is a brand new RISC OS compliant PCB and schematic design package. A multi-tasking desktop user interface based on !Draw ensures that users can quickly exploit the powerful draughting features, and create complex multi-layer circuit boards or schematics. Output is to RISC OS printer drivers, or the plotter driver supplied. Features Drawfile import/export, associative editing, drilling data, solder resist etc. etc. Supplied with comprehensive PCB and Schematic libraries.

WorraCAD

£99.95



WorraCAD is the de-facto standard RISC OS 2D CAD package. Working to 18 significant figures precision, WorraCAD provides all the tools required to produce superb accurate technical drawings. Outputs to plotters and RISC OS printer drivers. Features tangents, normals, intersections, parallels, automatic associative dimensions, grid, Drawfile export, linestyles, 16 layers, hatching, mirroring and stretching, CNC link available to Boxford Lathes. Libraries available seperately.

Draw Print & Plot

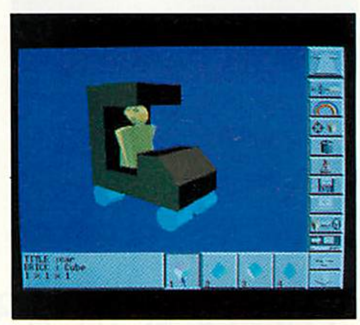
£39.95



Draw Print & Plot supercedes our earlier plotter drivers for Drawfiles (WorraPlot and ArcSign - upgrades available). DrawPlot accepts drawfiles and creates output on HPGL compatible plotters. Features outline fonts, sprites, filled areas, line thickness and depth sorting to avoid colours overlapping. DrawPrint accepts drawfiles and allows them to be printed to RISC OS printer drivers at a different scale - for example to create huge posters (cropmarks are created automatically).

KiddiCAD

£69.95



KiddiCAD is an exciting 3D building block package designed for younger users. 3D models may be created, using the library of building bricks supplied, and rotated in real time. The high speed of operation and the live 3D view allows users to quickly gain an understanding of work in 3D. Models may be output as Spritefiles in colour or wireframe mode, and can then be imported into painting packages, DTP, Genesis etc.

Leaders in CAD for the Archimedes

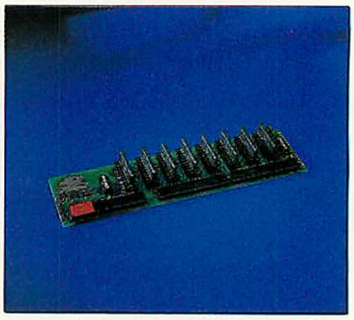
prices exclude P&P (£1.50) and VAT

OAK SOLUTIONS

COMPATIBILITY PERFORMANCE

A3000 RAM Upgrades

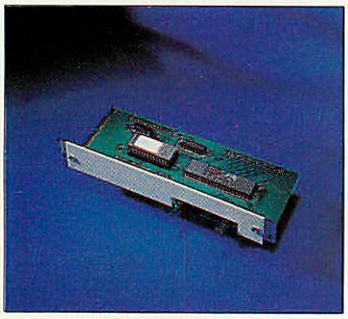
from £48.00



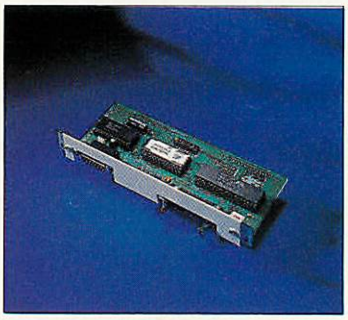
To really make the most of your A3000 you need more than the basic 1Mb of memory. The Oak A3000 RAM card offers an increase in memory to 2Mb or a full 4Mb to greatly enhance the usefulness of the machine. The RAM card has low power consumption and gives off a minimal amount of heat so that reliable operation is ensured. The card is fitted with top quality connectors to eliminate problems due to poor electrical contact. Fitting the card is simplicity itself, and no soldering is required. Three versions of the card are available, a straight upgrade to 2Mb at £48.00, a 2Mb card at £65.00 which can later be upgraded to 4Mb and the full 4Mb upgrade at £156.00.

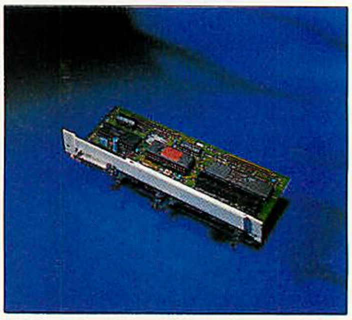
from £38.00

A3000 Expansion Ports



In response to demand from users, Oak Solutions have produced a range of interfaces for the A3000. The interfaces replicate some of the expansion ports found on the BBC model B/Master 128 series computers. To ensure the highest levels of compatibility, the interfaces are based upon the same integrated circuits as are found inside the older machines. The software drivers are provided in ROM on the expansion cards and support all the necessary calls which Archimedes and emulated BBC applications expect. For the technically minded, the user port supports OS_Byte calls &96 and &97, and the analogue port enables the ADVAL keyword in BBC BASIC.

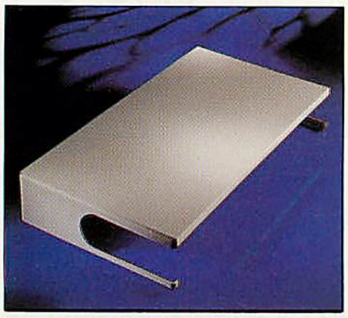




Three interfaces are available, and all occupy the internal expansion slot in the A3000. The first interface provides a User Port only and is ideal for use with devices such as the Concept Keyboard. The Concept Keyboard port costs £38.00. In the middle of the range, the User/Analogue port is available at £45.00 for a range of control applications as well as use with analogue joysticks etc. At the top of the range, the User/Analogue/Disc Buffer at £55.00 provides all the above facilities and also allows extra external floppy disc drives to be connected to the A3000. Comprehensive disc mapping options allow many combinations of drives to be used, and the card is supplied set up such that existing BBC floppy drives may be connected direct to the A3000 and appear as ADFS drive 1.

£14.95

A3000 Monitor Stand



The Oak Solutions A3000 monitor stand has been designed to fit stylishly over the A3000. It is manufactured from heavy gauge steel and can support up to 20" monitors. The stand is hand finished in a tough textured paint which perfectly matches the A3000. The sides of the stand are open providing ventilation for the A3000 and also giving access to the floppy disc drive and the power switch.

The best in A3000 expansion

Prices exclude £3.00 p&p and VAT   Telephone for Education Prices

Oak Solutions Ltd. Suite 25 Robin Enterprise Centre Leeds Road Idle West Riding of Yorkshire BD10 9TE
Tel: 0274 620423 Fax: 0274 620419

QUALITY RELIABILITY COMPATIBILITY PERFORMANCE

Battle of the Somme

The Battle of the Somme is a multimedia presentation focussing on the events that occurred around the 1st July 1916. The software allows pupils to explore text, sound, graphics, photographs, maps, laservision stills and movie sequences.

The Imperial War Museum have released movie film, photographs and sound recordings for the production of a laservision disc which is available for use with the package.

The package was conceived and produced by the Netherhall School in Cambridge with support from the NCET. It was authored using Genesis II and is focussed on cross curricular resources with worksheets supporting its use in History, English, Maths, Geography, Music and Art.

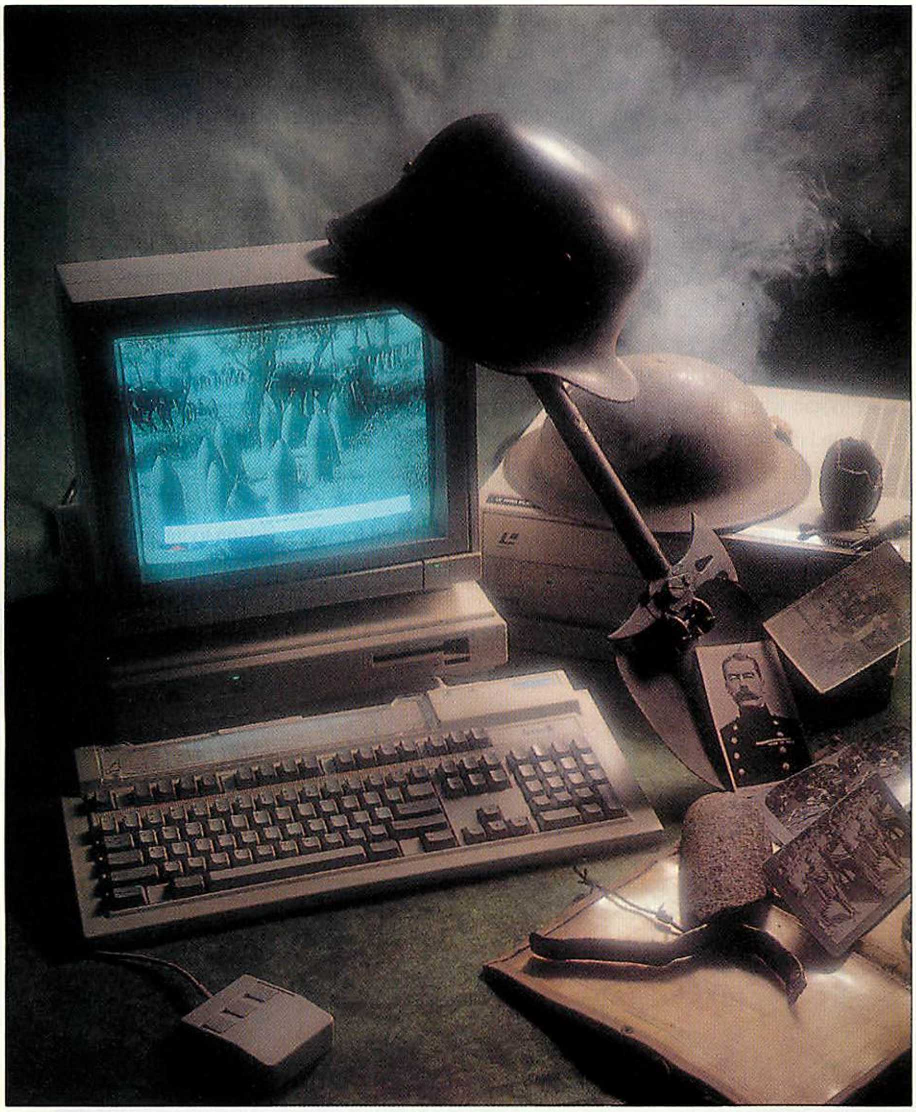
All materials are accessed via a library using single mouse clicks to navigate the system.

A letters section contains postcards sent back from the trenches by one soldier during 1915 and 1916 which provide an excellent stimulus to written work in the classroom.

A calendar provides easy cross referencing and fast access to specific events allowing the user to dip into dates between 1914 and 1916.

A Roll of Honour database lists all soldiers in the Cambridge Battalion killed on 1st July 1916. This data can easily be amended to contain information more appropriate to different regions. These lists provide good stimulus for activities in Geography and Mathematics classes as well as History.

The application contains songs that were sung to entertain the soldiers. The tunes may be played using the computer's sound system, or a rendition by a male voice choir can be heard via the laservision disc.



A set of maps allow access to information relating to specific areas - starting with a view of Europe and zooming right in to the front lines. A Concept Keyboard may be used at this stage as an alternative to the mouse.

Digitised still images, and those from the laservision disc may be accessed and these provide a wide range of images related to the battle. Audio sound tracks on the laservision disc allow the user to listen to interviews with a variety of survivors of the Somme, and the forty minutes of movie film have been segmented into short clips related to other materials in the package.

A textbook section provides important factual background to the events which took place. Selections include Women at War, Propaganda, The Air War and Joining Up.

Multimedia across the curriculum

Software site licence £95.00   Software site licence including Laservision disc £145.00   Laservision Disc £100.00

Prices exclude £2.00 p&p and VAT

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QUALITY RELIABILITY COMPATIBILITY PERFORMANCE

Oak Recorder

£29.95

Oak Recorder is Oak Solutions' low cost sound sampling microphone - the ideal way to capture sounds for your Archimedes. Oak Recorder consists of a hand held omni-directional electret condenser microphone, with integral wind shield and on/off switch, which simply plugs into the printer port of any Archimedes (including A5000) via a 3 metre length of shielded cable.



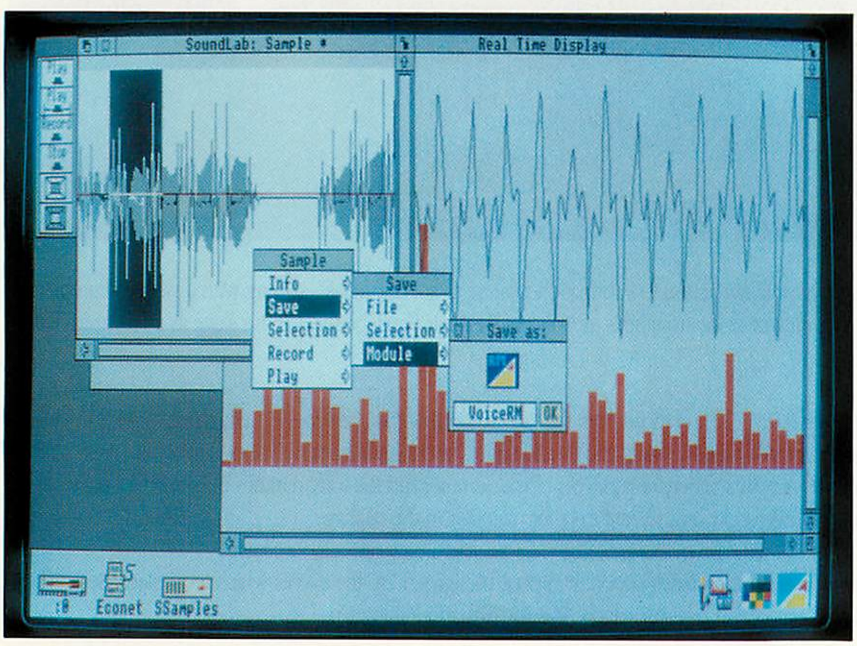
Oak Recorder is robustly manufactured to withstand the rigours of the classroom, and could not be easier to use. The software supplied with Oak Recorder allows samples to be recorded, played back and transferred to Genesis II and other Archimedes applications via the standard Armadeus file format.

Oak Recorder has several modes of operation; recording may begin on a button press, or be set to start when the sound level exceeds a certain threshold. Sound samples may be edited, and the start and end positions of the sample may be adjusted so that only the required portion of the sound is saved.

A Genesis II support module and application is also supplied for users wishing to integrate real-time sampling within their own Genesis applications. This allows exciting applications such as talking books, interactive modern language self study packages, special effects for school drama productions and sound libraries to be created. Add £3.00 to cover p&p.

£14.95

Sound Lab



In response to demand from users, an enhanced version of the software supplied with Oak Recorder has been produced. Many new features have been added, and these will be particularly useful to those with Archimedes music packages and for use in the school physics laboratory.

Sound Lab allows samples to be turned into relocatable modules to provide voices for applications such as Maestro, or to allow the internal voices of the computer to be replaced - your computer could be made to say 'sorry' instead of just beeping when an error occurs!

Sound Lab also provides a real time display with a spectrum analyser and a simple oscilloscope - ideal for investigating waveforms and for doing simple experiments.

Add £1.50 to cover p&p if not ordered with Oak Recorder.

Don't forget to order your Oak Recorder

Prices exclude VAT Telephone for Education Prices

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Tel: 0274 620423 Fax: 0274 620419

QUALITY RELIABILITY COMPATIBILITY PERFORMANCE

Genesis II

£129.95



The Genesis family of products represent the de-facto standard in multi-media on the Archimedes. Genesis II is the most powerful application in the range, provides all the facilities of Genesis Plus, as well as a comprehensive scripting language which allows even non-technical users to generate their own powerful desktop applications. The script language has the power to control CDROMs and LaserVision players, and can be driven by devices such as Concept Keyboards for special applications. The language can be extended by compiling external modules using the ABC compiler. Upgrades are available to existing users of Genesis and Genesis Plus (including Learning Curve).

£14.95

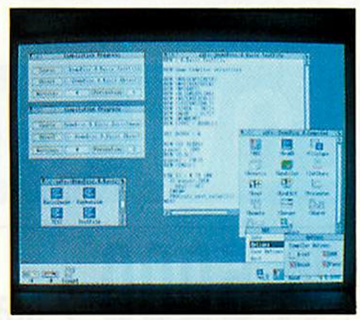
Genesis Script Language Book



The basic use of the Genesis Script Language is covered in the Genesis II manual, but to get the most out of the language and to explore its ability to manipulate lists and databases, to create dialogue boxes and menus and a whole host of more advanced functions, the Genesis Script Language book provides an essential reference work. The book contains a full description each of the 300+ script keywords in its reference section and has chapters on each key area within the script language. VAT is NOT charged on this product.

ABC BASIC Compiler version 3

£99.95



The Archimedes BASIC Compiler is the only serious BASIC compiler available for the Archimedes. It is especially suited to the professional user who requires the speed and protection of a compiled language whilst retaining the flexibility of using an interpreted language during the development phase. Compilation under Version 3 takes place as a RISC OS task thereby allowing the machine to be used for other jobs at the same time. Relocatable modules may be created allowing star commands to be implemented, along with library modules which can contain functions and procedures which may be called from any program compiled using ABC, including Genesis II.

£99.95

Cambridge Pascal



The Cambridge Pascal compiler supports a comprehensive version of the Pascal language and includes many extra features such as full string and error handling. Additional extensions allow the use of random access files and provide direct access to the operating system routines including star commands. The compiler runs under the RISC OS desktop and supports conditional compilation, include files and compilation to relocatable modules. Comprehensive error messages and a trace facility ease the development process.A library of procedures and functions is provided to support access to the window manager.

The best in Languages for the Archimedes

Prices exclude £1.50 p&p and VAT   Telephone for Education Prices

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Tel: 0274 620423 Fax: 0274 620419

VISA

OAK SOLUTIONS

QUALITY RELIABILITY COMPATIBILITY PERFORMANCE

WORD FOR WORD

Lost for words? Then a computerised thesaurus could be the answer. Dave Lawrence investigates a new desktop release

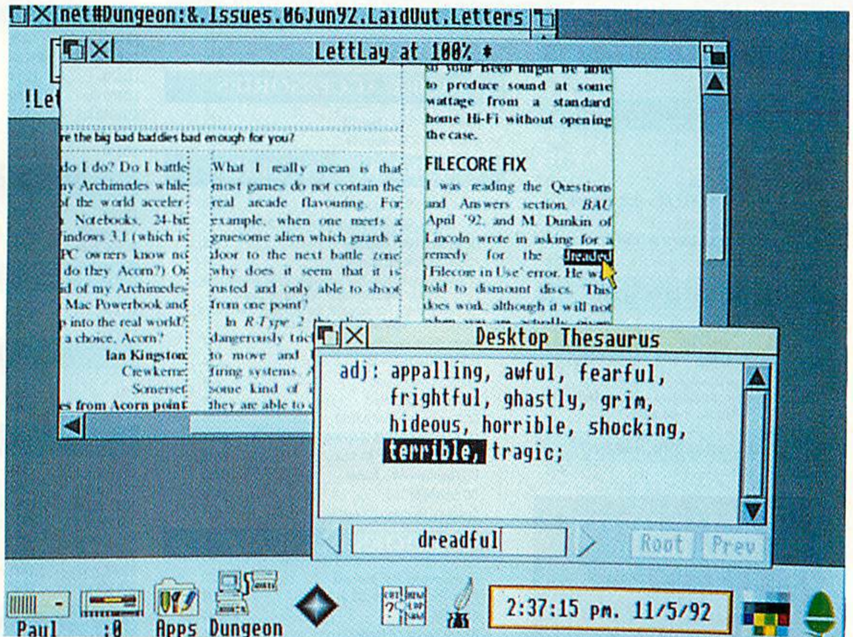
In the 32-bit world, most large word processors and document handling systems now come complete with an on-line spell checker. What has been missing in the electronic office, however, is some sort of thesaurus or synonym finder. At least up until now.

Risc Development's latest release, *Desktop Thesaurus* is a Risc OS application that tries to emulate your faithful *Roget's*. It does this by using a small desktop window, made up of a single-line text entry slot, a scrollable display area and a couple of buttons. Typing a word and pressing RETURN will scan the database and list the synonyms. The display window can be scrolled by means of a vertical scroll sausage on the right. As some of the entries are rather extensive, it would be nice to be able to enlarge this area, but there is no resize gadget.

Synonyms are stored along with their parts of speech so, for example, entering the word 'BRIDGE' results in the two lines: 'NOUN: arch, connection, link, . . .' and 'VERB: connect, cross, join, . . .'. From here, there are two ways to proceed. If you point at one of the chosen synonyms and click Select, it will copy it into the 'source slot' and display the synonyms for *that* word. This process can be repeated until you find your desired word; clicking on Prev will take you back to the previous word, Root will take you back to the first word.

Clicking with Adjust, on the other hand, inserts the letters of word into the keyboard buffer as if you had typed them. If you are hard at work on a piece of text in an editor, the word would appear as if by magic. In some editors (for example, *Ovation* and *Impression*) if you select a word and press a key, the word is deleted first – in effect, the old word is replaced with the new one. This functionality continues to work even with the thesaurus' Adjust-click.

One further feature of the program makes automatic searches even easier. If a text file (usually one word long) is taken from a document and dropped on to the 'source' slot, it will find a synonym without the need for any typing. If you were using a highlight-equals-replace editor (as outlined above), a word can be highlighted, 'saved' to the thesaurus, a synonym found and Adjust-clicked, to replace the original word. This is the closest you could get to a built-in, 'hot-keyed' thesaurus without actually having one. But there are two problems with this system. Firstly, if you are using *Impression*, you must remember to switch off With Styles before transferring your word. If you don't, the styles will be transferred along with the word and you could end up looking for a synonym for some spurious piece of text, such as a curly bracket!



Word power at your fingertips, with the Desktop Thesaurus

TRADITIONAL METHODS

As you can see from the above screenshot, the word *dreadful* produced a number of alternatives using the *Desktop Thesaurus*. But how does the program compare with more traditional means?

Roget's Thesaurus is a book for the purists. *Roget's* uses an indexing system and there are four separate sections listed under 'dreadful'. A worthy tome, but definitely not for those in a hurry. *The Collins Paperback Thesaurus in A-to-Z Form* takes a different approach. It is arranged in alphabetical order, so it is quick to use. But not, of course, as quick as the Arc. The synonyms listed are strikingly similar to those found by the *Desktop Thesaurus*, although it does produce a few more. However for speed and convenience, *Desktop Thesaurus* has the edge.

PRODUCT DETAILS

Product: Desktop Thesaurus
Suppliers: Risc Developments
Tel: (0727) 40303
Price: £19 plus VAT

Secondly, in many editors, double clicking a word includes any trailing spaces which seems to throw the thesaurus (it finds the next word in the list) as do leading spaces (it always finds the synonyms for A).

The entire word base can be exported, altered and re-imported to allow you to add your own words. There are over 13,000 present with over 94,000 synonyms – adequate for most needs.

The only drawback of a digital thesaurus is the size of the data. Special techniques can be employed when compressing a plain, alphabetical dictionary and they can typically be reduced to one fifth of their original size. A thesaurus will contain an apparent jumble of words because each entry will need a list of synonyms. At the moment, *Desktop Thesaurus* almost halves the data but a more efficient system is a possibility for the future.

To alleviate the space problem, the data file remains disc based. From hard disc, access time is almost instantaneous; from floppy it takes a couple of seconds at the most – quite an acceptable delay. The only drawback of a floppy-based system is the disc swapping involved.

Desktop Thesaurus will multitask with *Edit* on a 1MB machine, but you will need 2MB or more if you publish on your desktop. Although the thesaurus is stored on disc, it still manages to take up 160K of application space, presumably to speed up access to the file. But overall, the package is well-presented and functions very nicely. For £19 you can't really go wrong.

ORION COMPUTERS



Acorn

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A3000 LC Col. + Printer Sys.	£1085
(as above plus Acorn JP150 Printer)	
A3000 Special Access	£676

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A5000 2Mb LC + 40Mb HD	£1531
A5000 2Mb LC + Printer	£1765
(as above plus Acorn JP150 Printer)	

All A5000 2Mb models include an Acorn Multisync Monitor in the price.

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Archimedes 540	£2493

SPECIAL OFFER
FREE PLINTH when purchased with computer!!

2Mb Upgrade F.O.C. or 4Mb for £115.00 inc VAT

A540 - Multi-Sync Monitor + Star LC20 F.O.C.

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We Operate the Acorn Educational Scheme.
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Finance available over **twelve** months.

	Deposit	Monthly
A3000 LC Col System	£99	£75
A5000 2Mb LC	£179	£135

Finance Prices Shown above INCLUDE VAT

MONITORS

Acorn Colour (AKF17)	£200
Philips CM8833 II Colour	£208
Microvitec CUB3000 Colour	£200
Taxan MultiVision 775	£388
(0.28 Dot Pitch)	
Taxan MultiVision 795A	£439
(0.26 Dop Pitch. FST Black Trinitron Anti-Glare Tube)	

A400/1 ACCESSORIES

Items marked with * will work on A300/540

1Mb RAM Upgrade	£38
2Mb RAM Upgrade	£74
3Mb RAM Upgrade	£104
(Above memory fitted for £10.00 plus courier charge)	
Acorn SCSI Card	£238*
Acorn Ethernet II Card	£219*
Acorn MIDI Card	£64*
Arm 3 Upgrade (Adelph One)	£297
4Mb to 8Mb Upgrade	£649
C.C. Scan-Light A4	£369*
Sheet Feeder for above	£148*
C.C. Scan-Light + Feeder	£453*
C.C. Scan-Light Junior	£165*
C.C. Scan-Light 256	£199*
VIDC Enhancer	£27
Econet Module	£47*
Beebug Disc Buffer	£34
Orion TV Modulator + Audio	£41*
Replacement Floppy	£45

A540 ACCESSORIES

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(Expandable to 4Mb using only 8 chips)	
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Two slot external podule expansion case allowing the use of two compatible 400 series cards simultaneously. For example, the CC Laser Direct Card with an Orion IDE interface.	
Acorn Serial Upgrade	£17
Orion Serial Upgrade	£14
PRES Monitor Stand	£24
Acorn User/Midi Port	£46
CC Scanlight Junior A3000	£165
CC Scanlight A4 Mk II A3000	£369
CC Sheetfeeder for A4 Scan	£148
CC Scanlight A4 + feeder	£453
CC Scanlight 256	£199
Orion TV Modulator + Audio	£41

BOOKS/MANUALS

Programmers Ref. Manuals	£77.00
Prog. Ref Man. (RiscOS 3)	T.B.A.
BASIC V Guide	£19.45
A3000 Technical Guide	£28.95
A5000 Technical Guide	£63.00
A540 Technical Guide	£63.00
BASIC V: A Dabhand Guide	£9.95
Arc. First Steps	£9.95
Budget DTP on the Arc.	£12.95
Arc. Asembly Language	£14.95
Arc. Operating System	£14.95
Acorn D.T.P. Manual	£10.00
1st Word Plus Release 2	£10.00
ANSI C Release 3	£20.00
Acorn Desktop C	£25.00
Acorn Desktop Assembler	£25.00

PRINTERS

PLEASE NOTE
*All our printers are UK Models and **NOT** grey imports. Please take this into account when deciding where to purchase your printer.*
FREE ARC CABLE WITH ALL PRINTERS

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M1818	£242	M1709	£282
M2518	£506	M1918	£336
M1824	£276	M4018	£726
M3524	£726	M1924	£416
M2524	£556	HJ100	£194
HJ770	£436	HR20	£286

Canon (Inkjet Printers)

BJ10EX	£190	BJ10EX ASF	£49
BJ10EX Battery	£42	BJC800	£1404
BJ300	£296	BJ330	£386
BJ300 ASF1	£94	BJ300 ASF2	£71
BJ330 ASF1	£116	BJ330 ASF2	£86
120D+	£117	224D	£176

Citizen (2 year warranty)

Swift 9 Colour	£156	Swift 9x	£205
Swift 24e Col.	£232	Swift 24x	£302
Sw. 9/24Stand	£24	Swift ASF	£72
Projet	£336	24x ASF	£126
PN48	£216	120D+ C64	£132
LX400	£117	LX850+	£149
LX1050	£215	FX850	£273

Epson (new models)

FX1050	£345	DFX5000	£1092
DFX8000	£1958	LQ 100	£166
LQ570	£214	LQ870	£371
LQ860 Col	£450	LQ1010	£276
LQ1060 Col	£603	LQ 1070	£321
LQ 1170	£443	LQ2550 Col	£684
SQ870	£429	SQ1170	£Call

Hewlett packard

Paintjet	£455	Paintjet XL	£1060
DeskJet 500	£296	DJ 500 Col.	£436
DJ500 256k	£105	D/jet FX80 cart	£56

Mannesman Tally

MT81	£107	MT82	£212
MT91	£456	MT131	£396

NEC

P60	£336	P70	£406
P90	£631	Others	Call

OKI

182 Parallel	£181	182 Serial	£211
192 Parallel	£281	192 Serial	£301
193 Parallel	£351	193 Serial	£381
320 Parallel	£301	320 Serial	£331
321 Parallel	£361	**380 Parallel**	**£187**
390 Parallel	£361	391 Parallel	£457
390FB Par.	£481	390FB Ser.	£521
393 Mono	£697	393 Colour	£717

Panasonic

KX-P1170	£112	KX-P2180	£219
KX-P1123	£138	KX-P1124i	£183
KX-P1695	£282	KX-P1624	£283
KX-P1654	£341	KX-P2624	£285

Seikosha

SP1900+	£96	SP2400	£132
LT20	£246	SL210	£316
SL230	£406	SLP1000	£186

Star (new low pricing!)

LC20	£117	LC200C	£151
LC15	£179	LC24/20	£158
LC24/15	£246	LC24/200	£171
LC24/200C	£209	ZA 200c	£240
ZA250c	£306	XB 24/200c	£301
XB 24/250c	£361	SJ-48	£179

LASERS

Brother

HL-4	£587	HL-4PS	£1057
HL-4V	£687	HL-8PS	£1357
HL-8D	£1457	HL-8V	£1037

Canon

LBP-4+	£572	LBP-8/III+	£956
LBP8/IIIT+	£1346	LBP8/IIIR+	£1444

Computer Concepts Laser Direct

Qume 300dpi 6ppm	£866
600DPI Laser Direct Card	£326
LBP4 Laser 600dpi 4ppm	£572
LBP8 Laser 600dpi 8ppm	£1326

Epson

EPL-4100	£556	EPL-7500	£1161
EPL-8100	£956	Toner etc.	£CALL

Hewlett Packard

LJIIP+	£556	LJ IIIP	£706
LJ III	£1049	LJ IIID	£1557
LJ IIIsi	£2526	LJ IIIsi PS	£3102

HP Laser Peripherals

1Mb RAM	£50	2Mb RAM	£80
3Mb RAM	£110	4Mb RAM	£140
IIP/IIIP Tray	£91	Toner	£50
Adobe Postscript (IIP/III series)			£350
Adobe Postscript (Laserjet II)			£280
Pacific Page Postscript			£210
Pacific Page Postscript XL			£450
Turboscript III Postscript			£179

IBM

4019E	£756	4019	£999

Mannesmann Tally

MT904+	£626	MT908	£906

OKI

OL400	£486	OL800	£855
OL800 DB	£1051	OL830 PS	£925
OL840 PS	£1145	Accessories	£Call

Panasonic

KX-P4420	£633	KX-P4430	£626
KXP4450i	£939	KX-P4455	£1482

Star

LP4	£571	LP4-PS	£785
LP8-III	£916	LP8-IIIPS	£1146

ARC/A3000 APPLICATIONS

D.T.P.

Impression II (CC)	£127
Impression Junior (CC)	£72
Impress. Bus. Supplement (CC)	£41
Impress Borders (CC)	£12
EasiWriter (Icon Technology)	£133
Desktop Folio (ESM)	£79

WordProcessors

1st Word Plus Rel. 2 (Acorn)	£69
PenDown (Longman Logotron)	£46
PenDown Plus (Long. Logo.)	£68
Eas!Word (Minerva)	£16
Protext 5.0 (Arnor)	£119

Integrated Packages

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Desk Top Office (Minerva)	£69

Databases

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Flexifile (Minerva)	£84
Multistore (Minerva)	£154
Genesis II (Oak Solutions)	£119
Knowledge Organiser (Clares)	£41
PinPoint (Long. Logo.)	£85

Accounting Software

Financial Accountant (S. Vis.)	£208
Home Accounts (Minerva)	£34
Business Accounts (Minerva)	£298
Office Tools (S. Vision)	£285

Languages

ANSI C Release 3 (Acorn)	£124
Desktop C (Acorn)	£188
Desktop Assembler (Acorn)	£128
RiscForth (S. Vision)	£110

Music

Armadeus (Clares)	£61
Rhapsody II (Clares)	£45
Tracker (Serial Port)	£38
Notate (Long. Logo.)	£51
Scoredraw (Clares)	£44

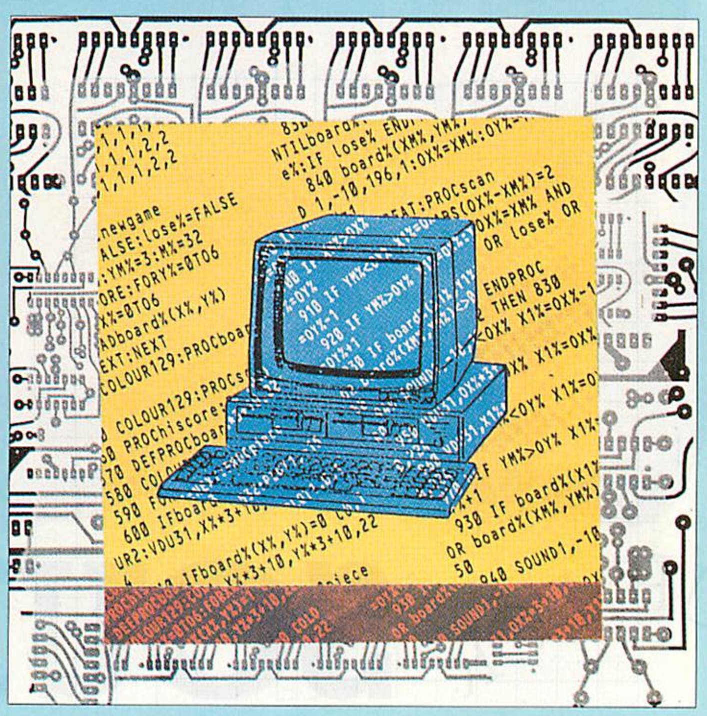
Orion Computers

Orion Computers
Orion Computers

BBC ACORN USER

PROGRAMS

The section that is packed full of programs for you to use



Programs for you, by you... this sums up our new *BAU* section in five simple words. The following pages contain many programs, mostly written by readers like you. And they are all supplied free with *BBC Acorn User*.

All you need to do to use the programs is copy them in from yellow pages. (Full instructions on how to type in a program are given on p79). If you are a subscriber to *BBC Acorn User* you have an added advantage – you can simply load the programs from your monthly disc.

This month we have a varied selection, from a stunning multi-colour graphics demo, to a fully blown application that will provide you with a year planner and a desktop diary. But first of all, for those people who want to make all manner of sounds – without expensive hardware or software – we have part two of our sound series on p62.

This month, David Radford introduces the concept of harmonics. The program provided with David's article allows you add harmonics to the basic waveforms described last month. Now you can begin to create lifelike noises, rather than just beeps. David has even included a keyboard routine, so you can play notes and chords. All in all, it is a fascinating insight into the world of computer generated sound.

ONE AND ALL

But perhaps you're not a programmer? Well you don't need to be! The majority of the programs in this section can simply be used; you don't need to know *how* they work, just how to work them. *INFO, however, goes one step further. Not only do regular *BAU* columnists, Dave Acton and Dave Lawrence, present you with many useful and fun programs but they take the trouble to explain how they work. Rest assured, after a few months of reading *INFO, you will know your Basic keywords from your assembly language operands!

Their Star Program this month is an eight-bit version of Mark Sidey's liquid simulation program, originally featured in our March 92 issue as a 32-bit program. It is equally at home in the physics classroom, teaching the principles of capillary action, as it is out of the school classroom being used for fun. Turn to p61 for a full explanation of how it works.

For those of you who are taking your first steps into the programming world, try turning to p67. Here the two Daves take a program to pieces, and explain it line by line. so you can pick up programming tips from the experts. Furthermore, each month they will explain one aspect of programming, and the best way to do it. This month they explain loops so turn to p62 for details. Oh, and 32-bit users, don't miss Jan Vibe's dancing fractal fern!

The second part of Dave Acton's article about the language C, is found on p77. If you're thinking of a career in computing, then C is *the* language to learn. But you don't have to understand C programming to use the example program – a desktop year planner and diary: it can also be loaded from the monthly subscribers' disc.

CONTENTS

THE THEORY AND PRACTICE OF SOUND 62
This month we look at harmonics and provide you with a fully working sound program

WINDOW ED 67
We review a new programming utility designed to help you to include windows in your programs

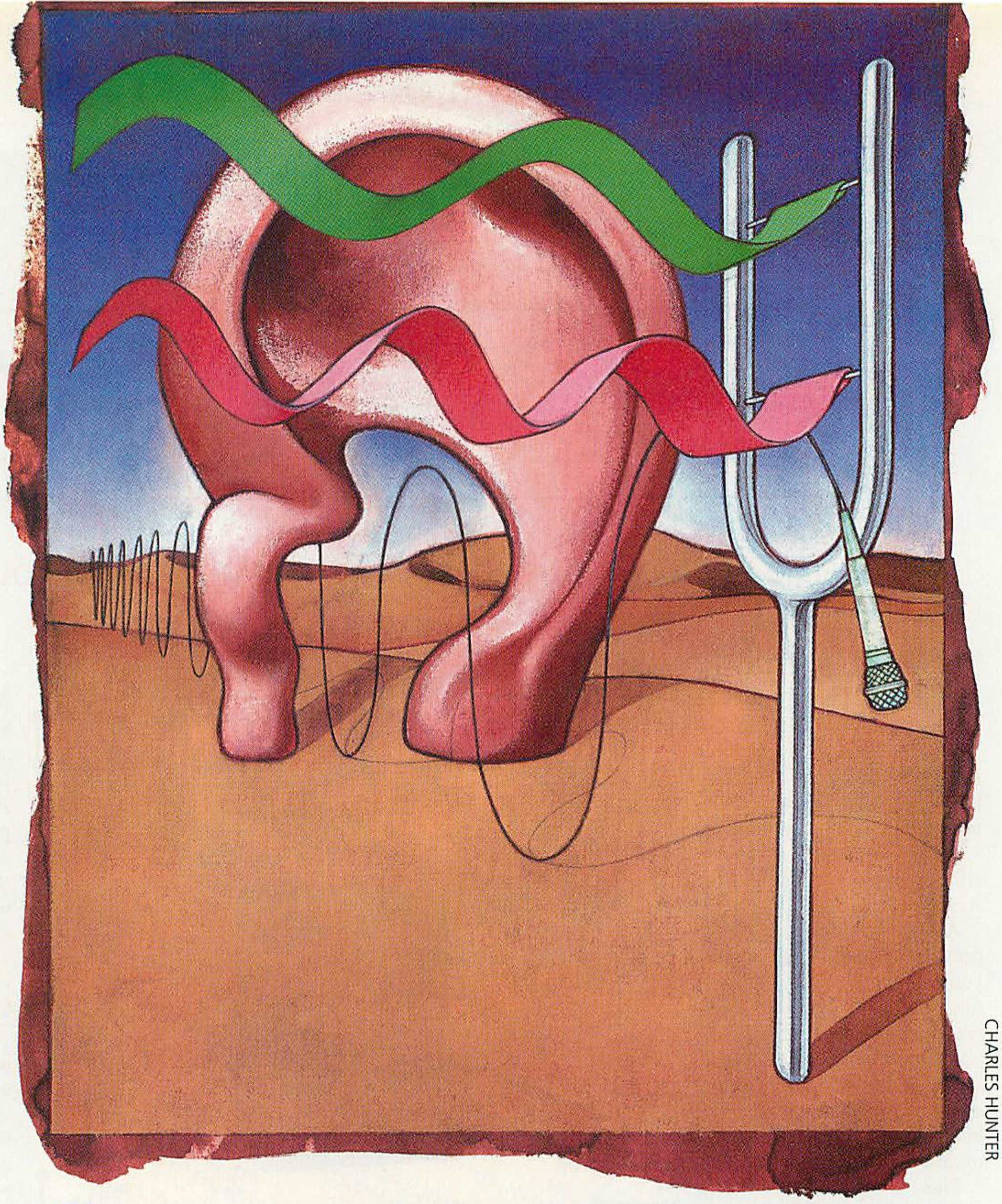
***INFO** 69
Crammed full of programs, hints and ideas

C PROGRAMMING 77
Try our useful time-planning application

BOOK LOOK 79
We review a book on C programming

ARC ASSEMBLY 75
Our assembly language course continues

YELLOW PAGES 79
The programs themselves, provided in full; just turn to the page and type them in!



CHARLES HUNTER

This month David Radford adds harmonics, volume and pitch to his sound concoction

WIRED UP FOR SOUND

Simple sounds are created by simple sound waves. This much was proved last month by our basic *Wave* program. However, the more interesting the sound, the more complicated the sample needs to be and this month we are going to venture a little further down the sound trail.

A sound has three main features: volume, pitch, and timbre (the shape of the waveform). Let's start this month by taking a look at volume. When you apply a special effect to a sample, the volume of the sample may sometimes be reduced. As this drop can be large, you often need to raise the volume afterwards. This is done by a process known as scaling. Before you can do this, however, you need to know what the current volume is.

Let's take a simple sine wave as an example. (If you can't remember exactly what a sine wave looks like, take a look at the top diagram opposite.) Like all sound waves, the sine wave moves backwards and forwards about a central line. The volume or amplitude of a sample is determined by how far the wave moves from this central line.

Actually measuring the amplitude at a certain point in the sample is very easy, as the sample data itself tells us the distance the point is from the centre line, and also whether it is above or below the line. The problem is that the amplitude must be measured at the point where the wave is furthest from the line, and you don't automatically know where this is.

Another twist is that the volume of a real sound does not usually stay the same from start to finish. For example, imagine striking a key on a piano. At first the note is loud, but it fades away to nothing. This causes a problem if you wish to alter the volume of a sample that you obtained using a sampler.

To get around this, you usually measure the overall volume of the sample: simply look through the sample to find the largest distance the wave travels from the centre line and use this as the volume. The advantage of this method is that all the bytes in the sample fall into the range

-V to +V, where V is the volume you have measured. Once you know the current volume, it is easy to change it, using a process known as scaling. Scaling involves multiplying all the bytes in the sample by a number. This number is found by dividing the desired volume by the current volume. The general equation is: new data = old data * new volume / old volume

The first listing called *Volume* shows this in action. When you run the listing, you will be asked whether you want to use Basic or machine code. The two versions of the routines are included in the same program for comparison. The Basic version is very slow, but it you may find it easier to understand than the machine code version.

The parts that do all the work are FNmeasure and PROCscale. A pointer to the sample data is passed to both, as well as the length of this data. PROCscale needs a third parameter, which is a value to multiply all the bytes in the sample by. This value must first be multiplied by 128, so that the procedure can use integer arithmetic for speed. Note that *Armadeus* files have a single byte at the start, giving the sample period and you must not include this in the sample data.

HARMONICS

Last month, I promised to cover a new synthesis technique and one of the simplest, and therefore most common, is harmonics. If you used last month's *Wave* program, you may have noticed that the sine wave was more boring than other waves, such as the square wave. This is because it is the simplest waveform around, a property which makes it very useful for synthesis.

Have a look at the diagrams opposite, which portray three sine waves. The top drawing is the fundamental or first harmonic. The drawing below it is two sine waves stuck together, but occupying the same space. This is the second harmonic. The bottom drawing is the third harmonic, which is three sine waves stuck together, but still taking up the same space as the other harmonics. Get the idea?

Harmonics are the same wave at different frequencies. The theory behind harmonic synthesis is that sounds are made up of one main sound (the fundamental) plus several harmonics of this sound. In theory, by joining the right amount of harmonics of a simple wave, such as the sine wave, it should be possible to create almost any waveform. Of course, in practice it doesn't quite work that way.

CHANGING THE PITCH

Altering the volume and adding harmonics is a simple task when compared to changing the pitch. Most people have heard the effect of playing a record or a tape at the wrong speed. Play it too slowly and the singing becomes drawn-out mooing. Play it too quickly and your living room is filled with frantic mice.

The same principle can be applied to samples. If you play them back faster than the rate at which they were recorded (or synthesized) you will raise the pitch. Similarly, slowing down playback will lower the pitch. One side effect of this is that, because the speed of the sample changes, so does its length, and low notes last longer than high notes. To avoid this, you should try not to play the sound too far away from its normal pitch. The simplest way of changing the playback is to use the command:

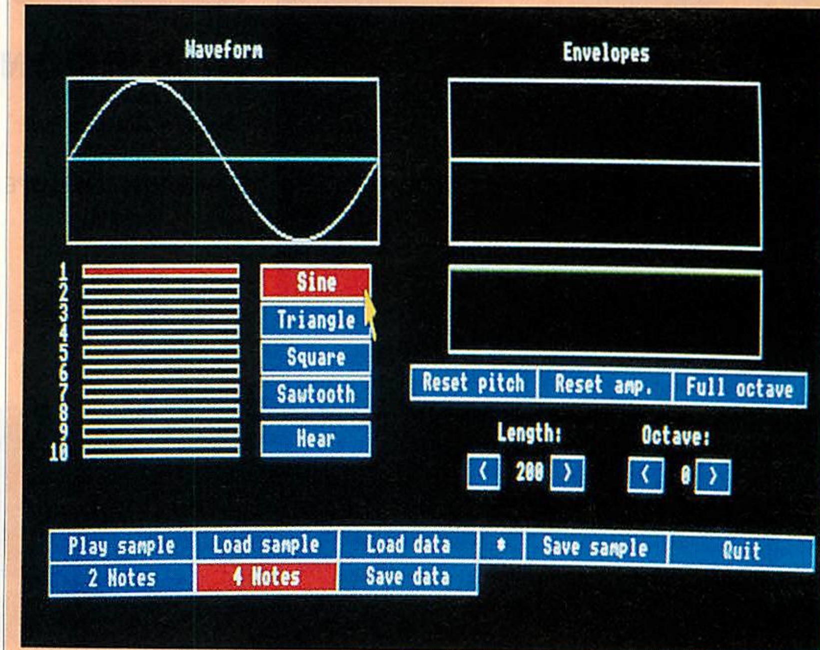
SYS "Sound_Configure",,,<period>

where <period> is the sample period to use for playback. Lower sample periods cause higher notes to be produced. (The default value is 48.) But, this method is not accurate enough to play musical notes. A way of altering the speed of a sample without having to alter the sample period is needed.

Imagine that you have a pointer to some sample data, that you want to output to the speaker. As each byte is sent to the speaker you add one to the pointer, to move on to the next byte. You carry on, until the pointer reaches the end of the sample. The end result is that the sound is played back at the normal rate.

Now, supposing you repeat this, but add 0.5 to the pointer instead of one. This time each byte is

WORKING WITH HARMONICS



The diagram above shows the *Wavegen2* program in action, displaying a simple sine wave. This is achieved by highlighting the sine option as shown. The shape of a sine wave should, by now, be familiar, and needs no further explanation.

In the example above there are no harmonics added to the fundamental sine wave. Slider bar number one represents the fundamental wave form and this is at full level. However the other bars, which represent the various harmonics are at zero level.

But what exactly is a harmonic? Well, the diagrams opposite should give you some idea. Basically they are related to the fundamental wave but there are two, three, or more, complete waves within the original wavelength.

Experiment by adding harmonics to a sine wave. (By sliding the second bar you can adjust the level of the second harmonic and so on.) You will find that these levels can be used to add resonance to the original sound. Harmonics occur in all natural sounds and you should also find that their addition to our sound program helps to create 'fuller' sounds.

Figure 1 – The maximum volume level

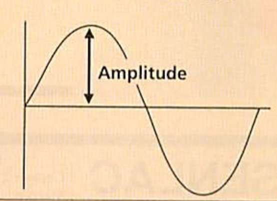
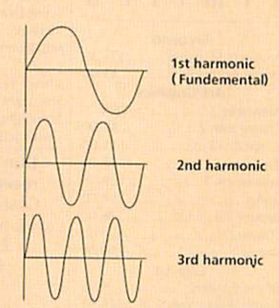


Figure 2 – Harmonics



sent to the speaker twice, as two bytes are sent to the speaker to move the pointer on by one byte. So the sample takes twice as long to be played back. In effect, the speed is reduced to by half, so the sound appears to have a lower pitch. By adding different values to the pointer, we can produce a range of speeds, more than enough to play any tune. This technique is known as a phase accumulator.

Luckily, there is a command provided under Risc OS to calculate a phase accumulator value for you: SYS Sound_Pitch,<pitch> TO <phaseacc> where <pitch> is the note that you need a phase accumulator for, and <phaseacc> is the value calculated. The pitch value must be in the new extended format, as opposed to the old BBC format), where middle C is &4000. (For more details, look in the Basic User Guide in the chapter on Sound.) The value returned by Sound_Pitch is the real value multiplied by &1000000. This is because only whole numbers can be returned from this call.

And if you haven't understood any of the above, then don't worry: The second listing called *Pitch* will do the hard work for you. When you run it, you will be asked to enter both the current pitch and the new pitch. You should give the pitches in the form C3 or D#2, that is, the note name followed by the octave number (C3 is middle C). Samples produced using the programs in this series are created with a pitch of E3.

TURN UP THE VOLUME

The reason we have covered volume in so much detail this month is because it is fundamental to special effects. A good example of this is last month's *Fuzz* program. As the volume of a sample may be changing all the time, *Fuzz* first divides the sample up into lots of miniature samples, each 256 bytes long. This means that the volume of these must be fairly constant.

The volume of each chunk is measured, but rather than scale all the bytes to a new volume, the value for the current volume is scaled down by the fuzz level. Any of the bytes in that chunk that go out of the range -V to +V, where V is the scaled volume, are changed to -V or +V, depending on whether they were positive or negative. This has the effect of chopping the tops and bottoms off waves. The smaller the fuzz level given, the more is chopped off. As you can see, volume lies at the heart of many special effects.

Anyway, that's quite enough theory for one month, so let's have some fun! Our final listing, *WaveGen2* is an advanced version of last month's *Wave*, incorporating all the techniques mentioned so far. That's all for now. Next month I'll be looking at some standards for use in samples. I'll also be showing you how you can incorporate sound into your own programs.

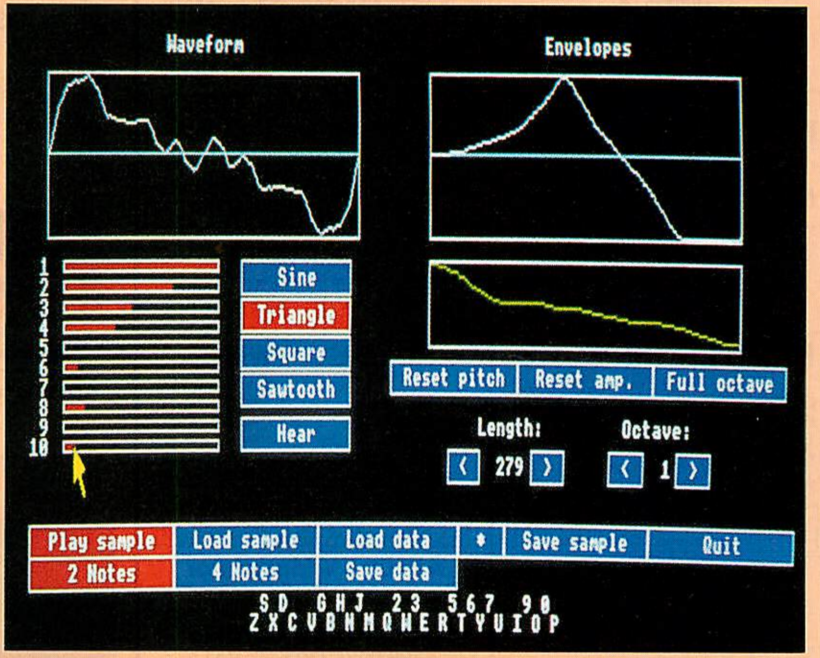
YELLOW PAGES

The main program this month, *WaveGen2*, is shown in action above and can be found on yellow pages. The other two example programs, *Volume* and *Pitch* can also be found in yellow pages. As always, if you are a subscriber, you can load the programs directly from your monthly disc.

USING WAVEGEN2

When you load up the program (see our yellow pages box below) you will see a screen similar to the one shown below. Forget the right-hand side of the screen for the moment and concentrate on the left.The row of ten bars represent the first ten harmonics of a sine wave. By dragging the bars, you can alter the level of each harmonic in the sound. The result is shown in the large box at the top of the screen and you can listen to it by clicking on the Hear option. You can also change the basic wave and the shapes available are sine, triangle, square and saw-tooth, selected using the icons to the right of the slider bars.

Once you are happy with a waveform, click Hear again to turn the noise off. Now try clicking on the Play sound icon. When it turns red, you can play your waveform back at different pitches using the computer's keyboard. The keys are arranged in the style of a piano keyboard, and this layout is displayed at the bottom of the screen. Pressing the E key will play the sample at its natural speed; any other key will play it faster or slower.



You may sometimes notice a slight delay before the note sounds. This is because the sample was re-calculated for some reason, and this usually only occurs after editing. There are two icons which allow you to control the number of notes you can play back at once: two notes will sound louder than four notes but chords will become impossible.

If the sound plays too high or low for your liking, the octave may be changed using the arrows either side of the octave number, which is about half-way down the right-hand side of the screen. Similarly, the length of playback can be changed using the length arrows.

As with last month's *Wave* program, these waveform do not sound very natural. This is mainly because, with real sounds the volume changes. We can do something similar, using what is known as an amplitude envelope. An envelope is a way to change the characteristic of a sound, over a period of time. This program has both an amplitude envelope and a pitch envelope and these are the two boxes on the right: the top box is pitch and the bottom one is amplitude. Simply hold down Select and drag the mouse around to change them.

Note that, with the pitch envelope, the middle line represents no change, the top of the box is up one octave and the bottom is down one octave. You can alter the range using the Full octave icon about half way up the screen on the far right. As before, you can play the sound back using the keys, providing you enable this option by choosing the Play sound option. If you make a mess of the envelopes, Reset pitch and Reset amp will put things back to normal for you.

When you are happy with a sound, you can save it by clicking on Save data at the bottom of the screen and typing in a filename. This can be loaded back later using Load data. Alternatively, you can save it as a sample for use in another program, or perhaps further processing, for example using the *Echo* program from last month. However, you will not be able to edit it in this format. Any sampled sounds you may have lying around can also be loaded and played back with the keys. The waveform shown above sounds rather like a dog barking, take a look at the way the pitch rises towards the middle of the note, like a dog's bark. With a bit of practice you could have a chorus of dogs barking a simple tune!

Incidentally, if you own a copy of *Tracker*, you may be interested in knowing that it can load any samples in *Armadeus*-format and, therefore, any sample created with the programs in this series. However, first you will need to set the sample format to linear-signed using the options window within *Tracker*.

WINDOW DRESSING

A new applicaton helps desktop programmers to design their own windows. Dave Acton puts it to the test

A natural part of writing a Risc OS application is the design of windows and the icons that live in them. All but the simplest applications store their window definitions in template files and so a template editor is needed to create and manipulate them.

Until recently, Acorn's own template editor *FormEd* was the only choice and, although it is functional, there has always been room for improvement. *WindowEd* aims to fill the gap and could benefit all desktop programmers.

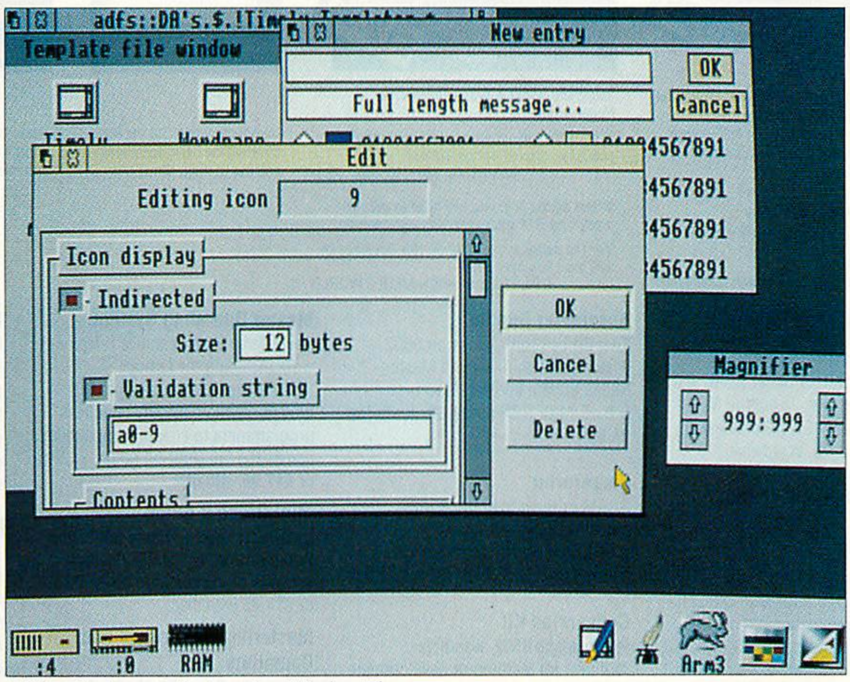
A major failing of the original version of *FormEd* is that all windows defined in a template file are shown on screen at the same time. and clutter up your desktop. However, the new version of *FormEd,* provided with C Release 4, can show windows within windows.

WindowEd also provides a viewer that can list your windows, similiar to the way that *Paint* provides a list of sprites in a file. You double-click on one window to display it, just as you would select a sprite in *Paint*. And *WindowEd* allows you to edit several template files simultaneously. This makes borrowing parts of one template file for use in another much easier. You can merge template files with *FormEd*, but it is messy by comparison. Tied in with this, is another nice little feature of *WindowEd* that allows you to grab an icon and copy it. You can grab icons from the current template files, from other template files and even from windows of other applications.

A less major, but nonetheless irritating problem with *FormEd* relates to windows without title bars or close icons. If you are designing a pane for example, that will sit on top of another window, it may not have a title bar. To move it around the screen during the design phase with *FormEd,* you have to add a title bar, move the window and get rid of the title bar again – a real pain. And because the window must remain on screen, you can often end up with a whole gang of immovable windows blocking your way.

WindowEd addresses this problem in a novel way, with a cute tool panel. On this are six icons, one of which is move. Click on move and you can drag an 'immovable' window around to your heart's content. Similarly there is a close icon for windows without their own, and other buttons for moving windows to the front, back and scrolling them around. Even more delightful, these tools, like the grab icon facility, work on the windows of other applications. Four more utilities come with *WindowEd*. *Bin* is a typical desktop dustbin. *HotSpot* shows the area around the pointer magnified in a window. This is what the magnifier on the Applications disc should have been and is surprisingly useful. *MouseLock* can lock the pointer horizontally or vertically. This allows you to move icons and so on without losing the alignment – a clever way around one of the basic problems of window designing. Finally, *Command* allows you to create windows with resident * commands. Any files dragged onto these windows have the resident commands applied to them, recursively if needs be.

Like all the best pieces of software, *WindowEd* has an unfussy, logical feel, with 3D style icons and a pointer that changes shape if a special menu is available and so on. Accompanying the software is a manual I would rate highly with a clear tutorial chapter and a manual-ette describes the four extra utilities. The only grumble I have is that when a window has undergone many changes, you will sometimes need to re-number all, or some, of the icons. *FormEd*'s menu-based method is much quicker than using the *Edit Icon* window of *WindowEd.* Aside from this, *WindowEd* is an excellent package – well written, well presented, well documented and well worth the money.



Editing the icon attributes using WindowEd

THE OTHER ED

FormEd, Acorn's template editor comes with *Acorn* C. The application has served desktop programmers well over the years and has undergone various enhancements. Although it is not officially a piece of public domain software, *FormEd* turns up all over the place on bulletin boards. The latest version comes with Ansi C release 4. (Comments in this review have been based on version 1.01a.)

PRODUCT DETAILS

Product: WindowEd
Supplier: Armen Software, Laxton House, Milton Road, Oundle, Peterborough, PE8 4AB.
Tel: (0832) 273444
Price: £35 or £100 for site licence

*INFO

Dave Lawrence and Dave Acton present their monthly mix of programs, for all Acorn users

STAR PROGRAM

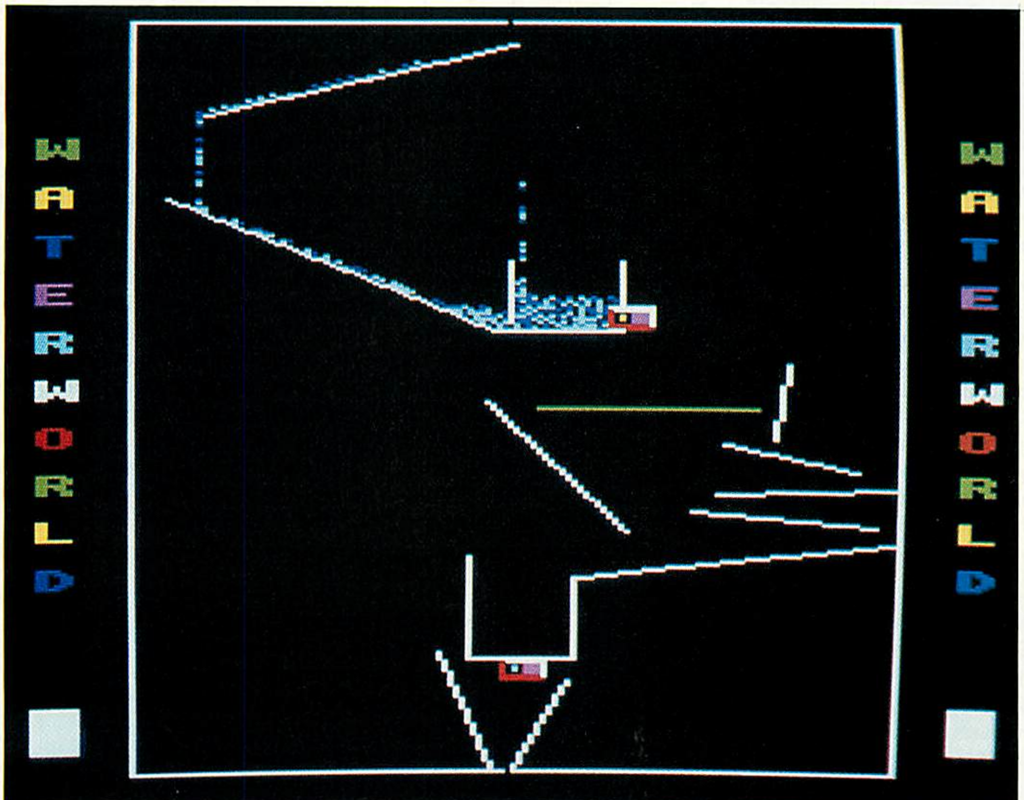
WATER WORLD

Programs: WaterEd, WetSrc
Description: Graphic demo
Authors: Matthew Godbolt, Richard Talbot-Watkins
Machine: Eight-bit
Listing: 430 lines of machine code plus 150 lines of Basic

The March 92 issue of *BAU* featured a water simulation of by Mark Sidey. It showed water cascading down the screen, stemmed only by strategically placed obstacles. Sadly, however, for eight-bit users, the original version was exclusively for the Archimedes but in response to our plea we can now present an excellent BBC version.

The eight-bit *WaterWorld* differs from the Arc version in a couple of ways. Firstly, the Beeb's processing power isn't quite up to the Arc's 800 water droplets, so 256 is the maximum. Secondly, due to the lack of speed and a mouse, interactive editing is not possible. Instead, a system of valves is used to compensate for this omission.

To use the program, the listing *WetSrc* must be typed in. Before running it type PAGE=&3000. This produces a number of tables and assembles the main code which is saved as *WaterMC*. Next, the front-end *WaterEd* can be typed in. This allows objects to be created. When run, the screen clears and you are presented with a small pixel cursor which can be controlled with Z, X, ?, *. SHIFT can also be used to accelerate the cursor movement. Pixels are set by pressing RETURN and deleted with DELETE.; rubber-banded lines are selected and terminated with the L key. The simulation is started with the TAB key and ESCAPE returns you to edit mode.



Water, water everywhere... eight-bit liquid simulation

The original sorting platforms are faithfully reproduced in this eight-bit version. To select the green sorting platforms, press 2. Blue droplets flow right and red droplets go to the left. Pressing 1 will reselect normal platforms.

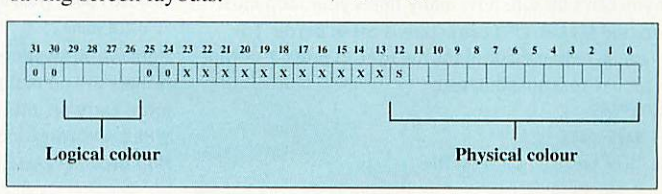
As mentioned, no interactive editing is available. Instead up to four 'valves' are allowed, which can be put in place by pressing f0 to f3. During the water flow, valves are toggled on and off using the corresponding function key. A valve is removed by pressing SHIFT plus the function key while editing. If a valve is turned on over some water droplets, they will adopt an acidic approach to the problem and burn through your freshly placed valve!

The program uses very similar logic to that of the original Arc version, with a minor refinement to the upward movement of droplets in a capillary. Much use is made of tables in the plot routine to ensure the maximum possible speed. You might like to add routines for loading and saving screen layouts.

COLOUR INTERRUPTS

Program: IntDemo
Description: A graphics utility
Author: Dave Acton
Machine: 32-bit
Listing: 330 lines of machine code and Basic

How can you display 1024 colours of your choice in mode 12? Well, the answer lies with interrupts as this *IntDemo* program shows. The prospect of getting more colours on the



Intdemo programs the mode 12 palette by writing directly to Vidc

screen has long tantalised programmers. Although mode 15 provides 256, you can't choose exactly what 256 shades these are and the palette is tricky to manipulate. No wonder then that many game writers are using the technique of colour by interrupts to increase their palette, and *IntDemo* is an example of how it's done.

In a sixteen colour mode, like mode 12, you can set the red, green and blue levels of

0	1	0	9	8
3	2	11	10	11
4	5	4	5	12
7	6	15	14	7

In *IntDemo* dithering – using a chess board pattern – smooths colours between shades

any logical colour to 16 different values, giving 4096 possibilities (16×16×16). To change a colour in Basic you use a command like:

```
COLOUR 4,&40,&50,&60
```

This is is turned into a sequence of VDU commands which ultimately become numbers poked directly into Vidc – the Arc's video controller chip.

It's perfectly possible to change a logical colour while the Arc's displaying a screen. Colour one might be red at the top, green in the middle and yellow at the bottom. So, although you are still limited to 16 logical colours, the physical colours they represent may be changed part-way down the screen. Quite often a game will have one set of sixteen colours at the top and another set at the bottom.

Our demonstration, *IntDemo,* doesn't change the palette once per frame though, but on each and every pixel line. Two important factors must be considered when using this technique.

Timing and leeway

It is vital that you change the colour at precisely the right moment. In *IntDemo* the palette is altered 256 times per frame. To do this requires accurate timing, which is achieved by using interrupts from a 2MHz clock (in IOC), and speed, which is achieved by concise routines that poke values directly into Vidc. Other sources of interrupts (like the keyboard) are also disabled most of the time so they don't affect the accuracy of our timed interrupts.

Another consideration to take into account is that it is best to give yourself some leeway. Games often have a couple of blank lines between different coloured areas. This is because you cannot guarantee the accuracy of your interrupts. *IntDemo* achieves a smooth picture by a trick, which we will look at in more detail later on.

To stop *IntDemo* simply press S and restart it by pressing G. Pressing Escape will halt the program and everything will be restored neatly. If available, the font *Trinity.Bold* will be used for the demonstration. If not, the system font is magnified and used instead.

A total of 1024 different shades are built up (using a procedure which 'smooths' the transition between different colours) and stored in a table. The colours for particular lines on the screen are read from this table at a point dependent on the current frame count. The colours of *IntDemo* are symmetrical about the middle of the screen, but of course you could, in theory, have four unique shades per line, providing 256x4=1024 different colours in total.

Working details

The IOC chip provides two 2MHz timers – zero and one. Timer one is available to us and *IntDemo* uses it to judge when to change the palette.

First, calibrate is called to count how long it takes to display eight frames. We do not assume that the timer runs at exactly 2,000,000 ticks per second, so using an event handler, we count VSync events (these occur just before a new frame is displayed) and record the times between them. In the variable each we place the time (shifted left six places) that we expect the display hardware to take to show each pixel line.

The routine doit sets up interrupt handlers for timer one and VSync. Although it is possible to use events and claim the event vector to spot VSyncs, for accuracy's sake we look at the VSync interrupt itself. We set the appropriate bits in IRQMSKA – the interrupt mask A – to enable the interrupts we are interested in.

We also disable other interrupts (including keyboard ones) by clearing bits in IRQMSKB, the other mask. So that ESCAPE, S and G are detected, we enable keyboard interrupts briefly just before a new frame, so we can check for these keys and then disable them again. You can see the effect of unwanted interrupts on the stability of the picture by holding down a key.

When VSync occurs, event_start is called which clears the VSync interrupt, and places the contents of each (shifted back down) into timer one. The timer is then set counting downwards by writing to its GO register. Now, for every count down of each, an interrupt will occur and event_swap will be called.

It's event_swap that changes the palette. First it clears the interrupt condition, then reads from a table of colours (at table) the 12-bit values it needs to place in the Vidc registers to change the palette.

The smoothness of *IntDemo* is achieved by keeping slightly ahead. Changing all the colours on every line might

BEGINNERS' CORNER – LOOPS

However simple your program, it is very likely that some lines will need to be executed more than once. In other words, you will need a loop. Basic, particularly on the Arc, offers a wide choice of looping methods and it takes practice to decide which sort of loop to use. The simplest, but the least useful is:

```
10 i=0
20 i=i+1
30 IF i<10 GOTO 20
```

which counts up to 10 using the variable i. GOTO loops are not 'structured' and should not really be used. Far better to use one of Basic's alternatives to 'wrap up' neatly those instructions that need to be repeated. In cases where you know how many times you want to repeat a section of program, the FOR...NEXT loop is best. To add up the numbers from 1 to an entered value *n* use:

```
10 INPUT n
20 total=0
30 FOR i=1 TO n
40 total=total+i
50 NEXT i
60 PRINT total
```

If you can't be sure how many times your loop must run, the REPEAT...UNTIL structure is often better. For example, when waiting for the user to press Y or N in response to a question use:

```
10 REPEAT
20 key$=GET$
30 UNTIL key$="Y" OR key$="N"
```

The loop may be executed just once or 100 times (if the user is particularly stupid or has CAPS LOCK off) But sometimes even once is too many times. Consider a string a$ which the user has entered. We might want to strip all spaces from the front of it. A simple loop removing one space at a time would be ideal, but of course there may be no spaces at all. Basic V on the Archimedes provides the WHILE...ENDWHILE structure for such occasions:

```
10 INPUT a$
20 WHILE LEFT$(a$,1)=" "
30 a$=MID$(a$,2)
40 ENDWHILE
```

The loop will continue until the first character of a$ is not a space. If the string entered has no spaces at the start, the loop will never be executed and instead, control will jump to the line after the ENDWHILE. You can simulate the WHILE...ENDWHILE loop on a eight-bit machine by using a boolean variable (one that can be TRUE or FALSE). Here's how:

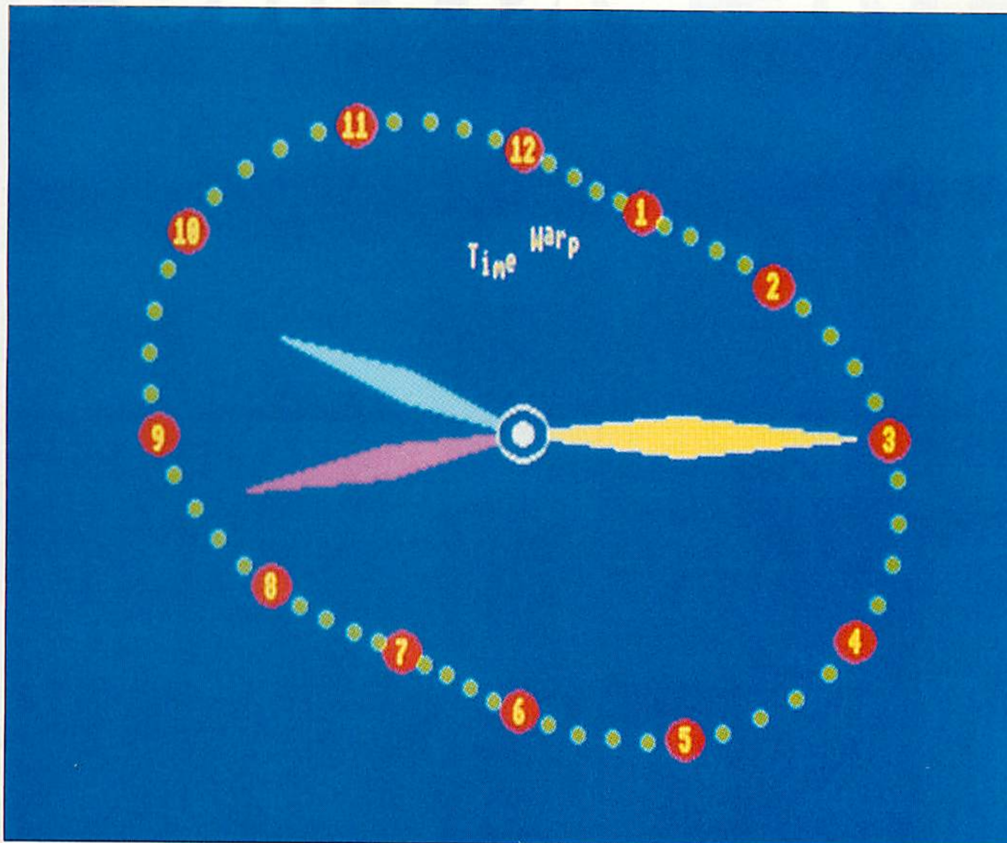
```
10 INPUT a$
20 REPEAT
30 done=LEFT$(a$,1)<>" "
40 IF NOT done THEN a$=MID$(a$,2)
50 UNTIL done
```

Here we've swapped the logic around so done is TRUE if there are no more spaces to strip. REPEAT...UNTIL loops carry on until a condition becomes TRUE whereas WHILE...ENDWHILE loops continue until a similar condition becomes FALSE.

produce some flicker so instead we change only four at a time. The diagram on the left shows the idea. On line 0, only logical colours 0, 1, 8 and 9 are used. Colours 0 and 1 are set to a particular shade and colours 8 and 9 to the opposite hue. Line 1 contains only colours 2, 3, 10 and 11 and so on. When the display hardware comes to show line 0, the colours on it have already been set up. In fact, the interrupt routine will be busy changing the colours on, say, line 3 which is yet to be displayed.

Dithering – mixing colours in a chessboard fashion – also smooths the transition between shades. Each line contains a mixture of logical colours. On line 0 the mixture is either 010101... or 898989... Sometimes colours 0 and 1 will be set to the same hue, but they may also be set to slightly different ones to provide an intermediate stage of shading.

The demonstration screen is produced, using an ECF pattern which takes all the effort out of setting adjacent pixels to different logical colours. When the screen is complete, the circle is coloured using logical colours zero to seven whereas the writing and surrounding area use eight to 15. These are always set to the opposite colours of zero to seven to provide a contrast.

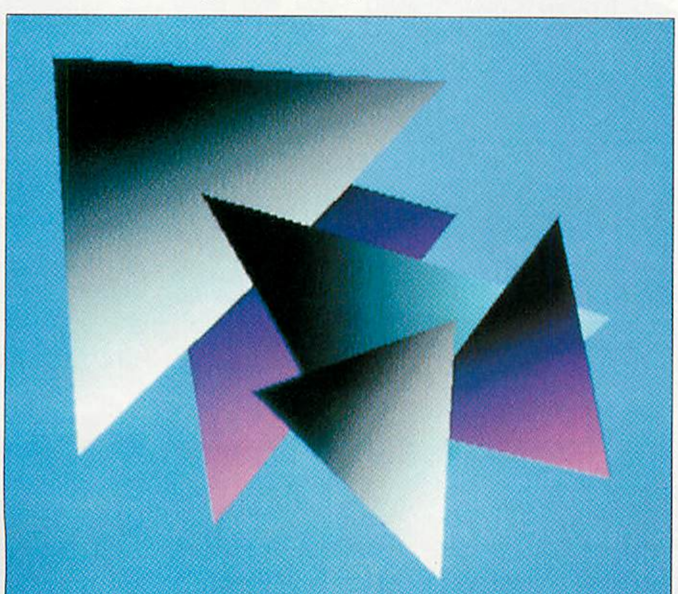


One of the VIbe Trio: time passes by, in Dali-esque fashion

Writing to Vidc

Changing the palette by writing to Vidc is simple enough and the diagram on p62 shows how it's done. The Vidc always lives at address &3400000 and you must be in supervisor/IRQ mode in order to write to it.

To program a colour, build a word as shown in the figure on p61. The zeros must be zero and the Xs are ignored. The logical colour – 0 to 15 in mode 12 – is placed in bits 26 to 29. The red, green and blue intensities – each 0 to 15 – are placed in the bottom 12 bits. Finally, bit 12 is the supremacy bit, which is only used by specialist hardware.


Gouraud shows you how to get smooth 3D shading in your Beeb programs

VIBE TRIO

Programs: CrazyLet, Dali and Fern
Description: Graphical demos
Author: Jan Vibe
Machine: 32-bit
Listing: 50 to 80 lines, Basic

This month we have three more graphical offerings from *INFO regular, Jan Vibe. *Fern* is a piece of recursive animation. The plant-like shape is created using the procedure PROCa which plots a section of stem and then calls itself to plot the next section as well as the two offshoots. The sub-branches curl around according to the angle t and so several frames (24 in all) are plotted with slightly differing angles to provide you with a short 'movie'.

Each frame is stored in a sprite block spr and you will need about 500K of Basic workspace to run the program. As with many of Jan's programs, screen swapping is used to remove flicker.

Crazylet is another piece of animation, but it works in real time. Again two screen banks are used for smoothness, and the different-sized letters are produced using the VDU 23,17,7 sequence that we've seen before in *INFO. For more details, note that *Crazylet* is the subject of this month's *Line by Line* box.

Finally, I need say nothing about *Dali* (shown above) except that it is a computer-art joke. Hope you like it!

GOURAUD SHADING

Program: Gouraud
Description: Graphic utility
Author: David Walters
Machine: 32-bit
Listing: 90 lines of Basic

Gouraud's shading technique has long been used to colour 3D images smoothly and this short demonstration by David Walters shows how easy and effective the method can be.

The technique is applied to triangles, whose corners are of known intensities. David's program first calculates the intensity of each point on the bounding lines. Then, working down the image, it fills in each pixel row with a smooth progression from the intensity of one side to that of the other. David says: 'To make the shading appear even smoother,

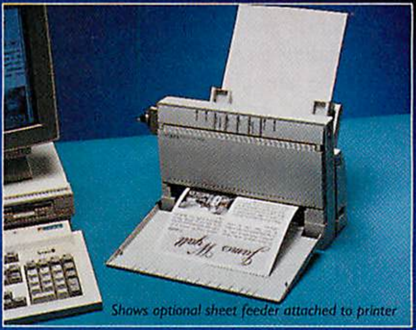
THE DRIVING FORCE



Winner of the Best Printer in the recent Computer Shopper Awards, the Cannon BJ10ex printer has revolutionised the small printer market. It offers 360 dpi, near laser printer quality, on plain A4 paper, in an incredibly compact and lightweight housing. Unfortunately the existing RISC OS printer drivers, based on the standard Acorn drivers, have definitely been in the slow lane, locking your computer up for the entire print process, often up to ten minutes per page.

Computer Concepts have now created a set of RISC OS printer drivers, called TurboDrivers, that are optimised for the Cannon BJ10ex printer. The result is the perfect combination of budget printer and RISC OS printer driver, able to print full 360 dpi high resolution pages at a quality superior to that available from any dot matrix printer.

The TurboDrivers not only print the pages faster, but give control back sooner - up to ten times quicker. The table shows the time taken to print and the time the computer is occupied for some typical example pages.



Shows optional sheet feeder attached to printer

The TurboDrivers print faster on an ARM2 machine than traditional drivers on an ARM3 machine. In addition they can send the print data to disc and then print from disc in the background, so the computer and almost all memory remains free for other uses, while the printer gets on with printing.

	Standard Driver	TurboDriver	
	Time to complete	Time to complete	Time to get control back
A complex page of text & graphics	521 seconds	199 seconds	70 seconds
2 pages text in different fonts	753 seconds	283 seconds	64 seconds
One complex page from !Draw	643 seconds	261 seconds	187 seconds

All times in seconds from a standard ARM2 Archimedes with 4MBytes RAM and hard disc. Times would be faster for an ARM3 based machine.

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I used a simple error-spreading algorithm. The error of each pixel is the amount by which it differs from the nearest available plotting intensity.

'These differences are added together sequentially, and when they are greater than the current intensity step, one pixel of the next intensity up is plotted and the size of that step is taken away from the error.'

Gouraud just plots random triangles on the screen but as David points out, 'The technique is useful for the smooth rendering of 3D objects (like space shuttles, VW Beetles and teapots).

'The triangles that make up such objects are specified by the three points and their respective intensities. In a 3D objects, these intensities would be calculated by averaging the planar intensities of every triangle associated with those points.'

BEEB COLOUR

Program: BBC-DLI
Description: Graphic utility
Machine: 8 bit, BBC B only
Listing: 200 lines m/code

A special this month for BBC users, from Tristram Mabbs, is a summary of an article that first appeared in *BAU* in 1984. It demonstrates Display List Interrupts – a technique that allows more than the usual number of colours to be displayed on the screen at a time.

When the BBC first appeared, many people were amazed at its ability to display high resolution graphics (Mode 0) as well as having a large number of colours available. Unfortunately, a few weeks later, the very same people were also amazed at how little memory they had left. Of course, in these 32-bit days where the word megabyte has almost replaced kilobyte, we often forget what it was like back then. I'm writing this text in Mode 31 on an A5000 which takes up over 230K – more than seven Beebs worth.

But at that time, you could either resort to Mode 7 (limited graphics, but lots of colours and only 1K used) or purchase a second processor or shadow Ram board. Other computers at the time used a variety of techniques, the Spectrum had a bit-mapped screen for the actual pixels, but used a character-based map for colours. This meant that it could display relatively high resolution mono graphics, but was limited to only two colours per 8x8 block.

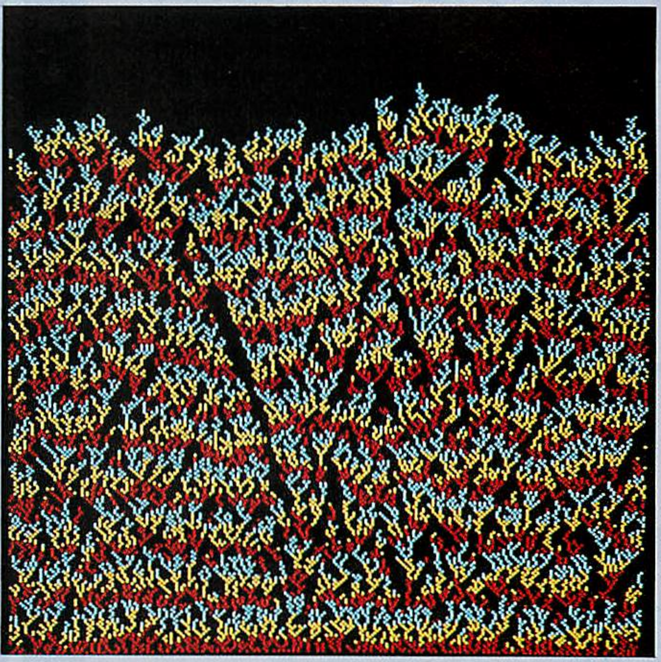
The old Atari range (400 and 800) used what they dubbed Display List Interrupts; a similar, but vastly improved, technique is employed by the Copper chip in the Commodore Amiga. This method involves redefining the colour registers during a scan of the screen. This may sound rather complex but fear not, application is relatively simple. There are disadvantages: you cannot cleanly redefine a colour while it is being displayed – it tends to flicker and the processor interrupt overhead is increased, slowing the machine down a fraction.

Two interrupts are trapped – firstly the vsync interrupt, this happens at the start of a screen scan. At this point, all colours are reset and a timer is started. After a given count is reached, we know how far down the screen the scan has reached and can change the values of the colour registers.

Before going any further, a brief explanation of the video controller will be useful. We cannot use the nice convenient VDU 19 method of changing the palette as it takes far too long. The video controller has two registers that appear at &FE20 (control) and &FE21 (palette). The palette consists of two 'fields'. The top four bits are an address, the bottom four bits contain a physical colours EORed with seven. Thus a

ONE LINE CORNER

Programs: Chaos, Weed, MarsScape, GasPlanet
Description: Graphic demos
Authors: Matthew Godbolt, Richard Talbot-Watkins, Peter Warden
Machine: Chaos, Weed: all machines; MarsScape, Gasplanet: 32-bit only
Listing: One line Basic



One line corner this month offers a selection of programs, some silly, but all clever and written in a single line of Basic. We have a couple of one-liners from Matthew and Richard. The first is entitled *Chaos* and closely resembles Duncan Lilley's *MicroArt* program from the March 92 issue. There is no zoom option available, but the program tries to scale the image so that it will fit onto the screen by running the algorithm for 100 dots without plotting anything – this will give a rough idea of the final size. When run, you are required to enter three numbers between -2 and 2. As an example, try your birthdate (.13, .12, .1967) or a phone number (.071, .490, .1444).

The second one-liner, shown above, is called *Weed*, because it draws, er, weeds. It produces a remarkably similar effect to B Moseley's *Frond* program from October 91, but in one line of Basic rather than umpteen lines of code. There are 256 columns of pixels and each are allocated a byte which contains the maximum height reached so far. The program chooses a random column and, depending on the height of the neighbouring columns, a point is placed either above, diagonally left or diagonally right. Every 512 dots, the colour is changed, resulting in the multi-coloured weed effect.

Peter Warden's striking *MarsScape* and *GasPlanet* one-liners are based on a variation of the Browning line (or Brownian curve as it is sometimes called). Peter explains: 'Basically a Brownian line is constructed by creating a pair of axes, x and y, and setting a value p to 0. You plot this point at 0,p on the graph, add a random value between 1 and -1 to p, and replot at 1,p. Continue this until you reach the end of the y-axis.

'In the case of *MarsScape* I've modified this by introducing another axis, z. The value of p is calculated by adding the mean of the values of p at the points z-1,x and z,x-1 and adding a random value between 1 and -1 to p. The value p is then used as the colour of the pixel(z,x). *GasPlanet* is the same as *MarsScape* except the surface has been mapped onto a sphere.'

CRASH COURSE TWO

This month we have a short update to Crash Course, found in *INFO November 91, which talked about some of the features of Risc OS. Stephen Burke has sent a tip on desktop start up files. Many boot files or obey files passed using the -file option after *Desktop will contains lines to initialise the system resources, fonts and so on. Sometimes these will be on filing systems other than ADFS, like SCSI. Confusion can arise because under certain circumstances the filing system name is stripped off. Take the line: SCSI::Winnie.$.!System
which might be included in an obey file to set System$Path etc. The SCSI: will be stripped off by the CLI. The solution is to use *RUN:

```
Run SCSI::Winnie.$.!System
```

LINE BY LINE: CRAZYLET

By special request, *INFO now has a new section. Each month we'll be taking a look at one of the *INFO listings line-by-line as an aid to readers who want to improve their programming skills. Our first example is the 32-bit demonstration, *CrazyLet*, by Jan Vibe, one of the Vibe Trio described on page 63.

60 Select 256 colour display mode 13
70 Set up string to display 'crazily'!
80 Declare arrays. These hold information about each crazy letter. Every letter has an x and y angle, in a1%(), a2%(), and a rate of change of angle, in t1%(),t2%(). The x and y size of a letter, in xz%(), yz%(), are calculated from the angles. Finally c%() holds colours of letters
90 Assign number of letter to I%
100 Set s1% and s2% to screen bank numbers 1 and 2
120 FOR...NEXT loop to randomise details of letters
190 Allow text to be displayed at graphics cursor
200 Switch the cursor off
210 If an error occurs (including ESCAPE) select the current screen bank, report the error, switch the cursor back on and stop
220 The main loop begins
230 Set x% to 320 – the number of pixels across the screen. We are about to calculate the width of the displayed string, so we can centre it on the screen
240 Change a randomly selected letter to a new random colour
250 The loop to update the details of the letters
260 Update x angle of a letter and keep in range 0-359 degrees
270 Update y angle similarly
280 Update x size. The size is dependent of the x angle and Sin is used so the letters grow and shrink in a smooth cycle
290 Update y size similarly
300 Subtract the x size in pixels from the running total
310 Next letter
320 x% is set to 2*(320-total width of message in pixels) = 640-2*width. Because each pixel is 4 OS units wide, plotting the string starting at 640-2*width will ensure it is centred
330 The loop to plot the letters begins
340 y% is set so letter is vertically centred
350 MOVE to where the letter is to be displayed
360 Set the text size to that of letter n% using VDU sequence
370 Select the letter's colour
380 Print the letter
390 Move x% on by the width of the letter
400 Next letter
410 Wait until VSYNC – this is to reduce flicker
420 Select screen s1% for plotting on
430 Select screen s2% for display
440 Clear screen s1%, now 'hidden', ready for next plot
450 Swap s1% and s2%
460 Carry on indefinitely

value of &x3 would be colour four (three EOR seven). In 16 colour modes, the address corresponds directly to the logical colour numbers. In two colour modes all of address zero to seven must be programmed with the same logical colour for physical colour zero.

Likewise, all of eight to 15 correspond to physical colour one. In four colour modes, there is more complex. Colour zero is controlled by addresses &0x, &1x, &4x and &5x, colour one by &2x, &3x, &6x and &7x, colour two by &8x, &9x, &Cx and &Dx and colour three by &Ax, &Bx, &Ex and &Fx. All you need do to run the program is to set up a list of times and palette changes and call PROCset_dlis. The list consists of three byte entries terminated by three &FFs. An entry is made up from a two byte timer value a single byte to write to the palette register.

If you know anything about machine code and interrupts, then the code should be fairly self explanatory. If you don't, then try not to think about it – just run it!

Two other procedures are provided, PROCdlisoff and PROCdlison, to disable and re-enable the DLIs respectively.

AS EASY AS ABC . . .

Program: ABCdir
Description: ADFS utility
Author: Nick Craig-Wood
Machine: 32-bit
Listing: 50 lines, Basic

ABCdir is a short utility to re-stamp all directories with the current time. This allows desktop filer windows to be sorted by date, but effectively have directories sorted by name.

Desktop filer windows can by sorted in four ways; by name, type, size or date. Most people use either name, to put their files in alphabetical order, or date with the most recent files near the top of the window. The disadvantage of date sorting is that directories will tend to migrate to the end of the list because, once created, their time-stamps are never updated. Files, on the other hand, are re-stamped when they are re-saved, making it easy to pick out the most recent version.

Nick's program gets round this problem with a rather cunning stunt. When sorted by date, any objects with the same time-stamp are sorted alphabetically. It works by going through the directory tree, starting at the current directory (by default), and date-stamping all the directories it finds with the current time. Of course the current time is only read at the start of the program, otherwise it would change for each stamping.

This has the effect of making the filer put all the directories at the top of windows (because they have all been re-stamped) in alphabetical order (because they all have the same stamp). Application directories which have a *!RunImage* file are not affected, because the directory is shown with the time and date of the *!RunImage* file rather than its own. After you run the program, you have an added bonus: any newly created files will be shown 'above' the directories, making them very easy to spot.

OVER TO YOU

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So, if you fancy seeing your name in print and your work on numerous computer screens, send in your contribution to the following address:

✱INFO, *BBC Acorn User*, Redwood Publishing, 20-26 Brunswick Place, London, N1 6DJ.

TIP OF THE MONTH

Have you ever pressed Control Break on your Arc only to find a 'Bad program' error when you type OLD? As long as you weren't doing anything clever with machine code then the chances are that you can still get your program back.

This situation is most likely to arise if you dropped out of the desktop with F12 and entered Basic. Because the operating system handles its memory in pages, pressing BREAK (or RESET) is quite likely to shuffle all the memory around, so although if you print the value of PAGE, you'll be given the same value, the physical chunk of memory allocated to Basic may have moved. The simplest way to attempt recover is to type in the following single line straight away.

```
FOR I=PAGE TO HIMEM STEP
256:IF ?I=13 AND I?1=0 P.~I;:N.
ELSE N.
```

This will step through memory 256 bytes at a time eventually crashing out with an error (which can be safely ignored). The values it prints are possible start points for your program. If you write them down, or better still, print them out, then set PAGE to each one in turn and attempt to LIST. Often you will get 'Bad program' – just ignore this and move on.

Sometimes you'll get valid Basic programs, occasionally these will be just sections rather than complete programs, when you find a full program save it as Temp1 or something and continue on. Once you have found all possible programs check them all carefully to see if one was your lost listing. Keep a look out for old versions which may still be lurking in memory!

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Clear1	Clearface™	£40.00
Clear Regular, *Italic*, **Extra Bold**, ***Extra Bold Italic***		
Clear 2	Clearface™	£25.00
Clear Black, ***Clear Black Italic***		
Eric 1	Gill Sans™	£35.00
Eric Regular, *Eric Italic*, **Eric Bold**, ***Eric Bold Italic***		
Eric 2	Gill Sans™	£18.00
Eric ExtraBold, Eric UltraBold		
Eric 3	Gill Sans™	£25.00
Narrow, **Bold Narrow**, **UltraBold Narrow**		
Frederic	Goudy™	£35.00
Frederic Regular, **FredericBold**, **Ultra Bold**		
FredericOldStyle	Goudy™	£27.00
Frederic OldStyle Regular, *Frederic OldStyle Italic*		
Frederic Catalogue	*Goudy™*	*£18.00*
Gruby	Blippo Black™	£25.00
Gruby Black, ***Gruby Black Italic***		
Ida	Brody™	£22.00
Katie Title		£25.00
King	Windsor™	£25.00
King, **King Bold**		
LIPA	JUNIPER™	£12.00
LondonA 1	Adobe Garamond™	£40.00
Regular, *Italic*, **Bold**, ***Bold Italic***		
LondonA 2	Adobe Garamond	£25.00
Demi Bold, *Demi Bold Italic*		
Manutius 1	Antiqua™	£40.00
Book, *Book Italic*, Medium, *Medium Italic*		
Manutius 2	Antiqua™	£30.00
Ultra Bold, ***Ultra Bold Italic***		
Pisa 1	Eras™	£25.00
Book, **Demi Bold**		
Pisa 2	Eras™	£35.00
Pisa Light, Pisa Medium, **Pisa Ultra Bold**		
Rosemary	Korinna™	£40.00
Regular, *Italic*, **Extra Bold**, ***Extra Bold Italic***		
SCiFi		£18.00
SCiFi, *SCiFi iTALC*		
SHERIFF	COTTONWOOD™	£15.00
Simple	Frugal Sans™	£35.00
Light, *Light Italic*, **Bold**, ***Bold Italic***		
Venice	Italian Old Style™	£40.00
Regular, *Italic*, **Bold**, ***Bold Italic***		
Veronica	Sabon™	£40.00
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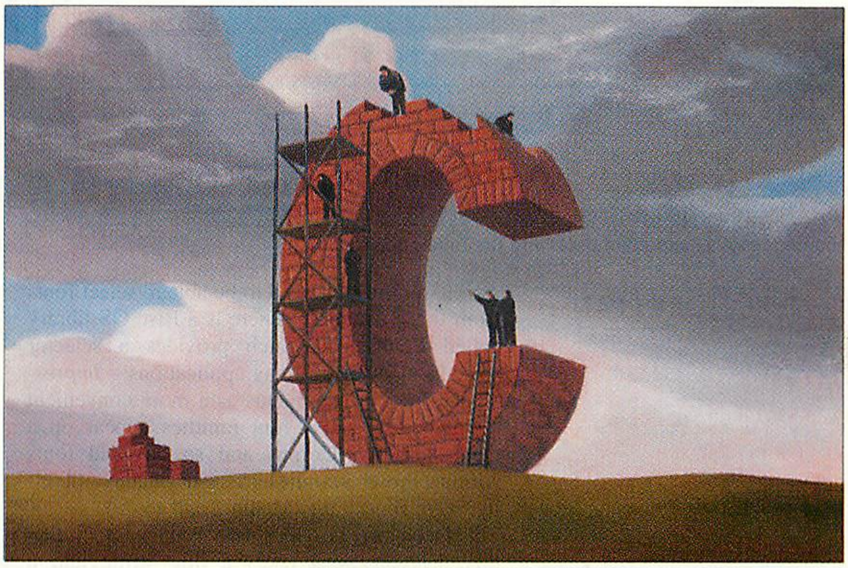
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TIMELY MOVE



ANGUS MEWSE

In the second part of our series on C programming, Dave Acton presents a time-manager application

If you have developed a taste for the C programming language – a state of affairs that was hopefully achieved in last month's article – then you will no doubt want to see how this versatile language can be put into action. C is well suited to programming in the desktop environment and this month we look at *Timely* – a complete RiscOS application.

Timely is a useful program in its own right, so let's take a look at how it is used, before we explain how it was written. *Timely* is a time planner that can be used on a daily, monthly or yearly basis. Next month we will add some new features, but all of the basics are provided in this month's listing. If you are a subscriber, you can load *Timely* from your monthly disc. If not you need to copy in the program from our yellow pages and compile it. Then double-click on *Timely* to install it on the icon bar and click on the icon to bring up the current year planner. You can bring up any day by double-clicking with Select. Alternatively, bring up a month by double-clicking with Select on its name. On a month viewer you can bring up a particular week by double-clicking above it.

Appointments are shown by coloured stars followed by a message. On the year and month planners there is only room for the stars, but these are colour-coded so you can easily spot birthdays, meetings, deadlines or whatever. To add an entry, simply bring up the appropriate day and double-click on it with Select. Enter the message, select one of the eight colour-coded types and click on OK. To alter or delete an entry, double click with Adjust instead. You can use the Next and Last buttons to browse through the diary to find the desired entry.

You can bring up a menu over any *Timely* viewer. To save all entries use the Save Whole Diary option. The default option is to save it as *Diary* in the *Timely* directory, but you can save it elsewhere. You can save just the current viewer as text, or a *Draw* file with the other menu options.

HOW TIMELY WORKS

An application in C is like any other program, in that it has a function main() which marks the start of the program. The main in *Timely* is typical of C applications and is only five lines long. First, timely_initialise is called, which attempts to initialise all the libraries, create menus and windows whose definitions do not change during the life of the application, and set up various global variables. If initialisation is successful, the main routine enters an endless loop that is called event_process.

Control at this point is effectively taken away from us. We have set up handlers in the initialisation routine to deal with events, menu selections and the like. These will be called if the user needs to do anything.

This month we are going to focus on the libraries used by *Timely*, looking at *C.Userlib*, *C.Memory* and *C.FontUtils*.

FONTS

C.FontUtils consists of routines to declare and manage fonts. A structure font_desc, which I introduced last month, forms the basis of font management. Where you need a font in your program, declare a variable of type font_desc and pass it, with the desired font name and size to font_utils_declare_font. This will call the appropriate routines from the Risc OS font library to locate your font and fill in the other fields in font_desc.

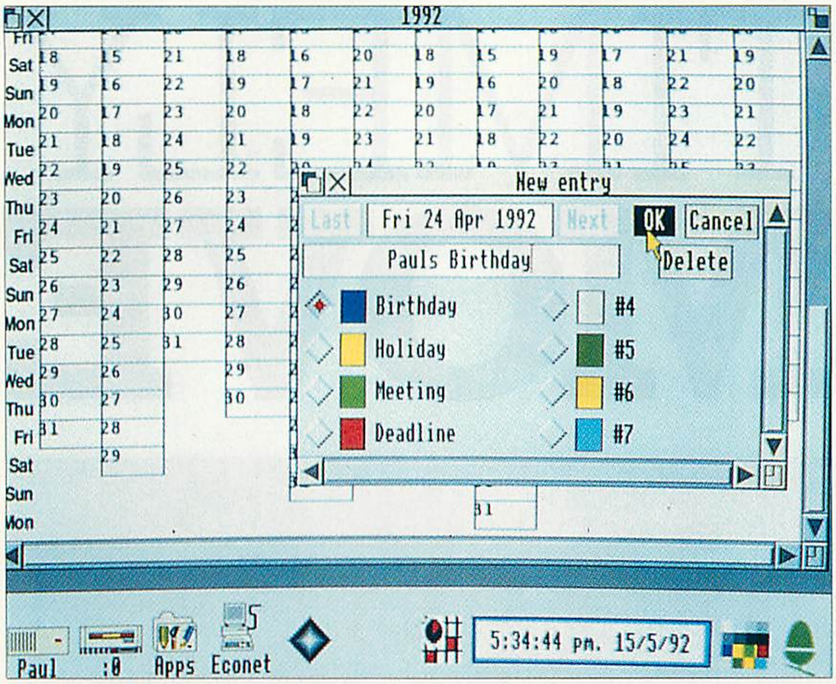
A secondary routine called font_utils_verify_font tries to track down the particular font you asked for, substituting the nearest it can find. You might want Alfred.Bold but an error box will be shown if this is not available and Trinity.Bold might be used instead.

PROGRAMMING ADVICE

Desktop programming can be awkward. Odd parts of your code may be called at odd times. In order to ensure that all the components interact successfully, note the following two points.

Firstly, global variables can be used so that different bits of your program can access the same information, but only use them if there is no alternative. Local variables are infinitely better as they make for less disjointed code.

Secondly, handles can often be passed to handlers. These are often void pointers (with case void*) and can be recast as necessary. *Timely* shows how they may be used effectively. When you save a viewer as a *Draw* file for example, the number of the viewer (an integer) is passed to the Save procedure, which uses it to save the correct diagram. Global variables can do the same job (save_mode is a real example) but use them sparingly, if at all.



Entering those all-important dates into the Timely application

DIRECTORY PLAN

```
$.!Timely.!Boot
          !Config
          !Run
          !RunImage
          !Sprites
          c.Timely
          Diary
          Make
          MakeFile
          o.Timely
          Sprites
          Templates
$.Library...
$.Risc_OSLib...
$.UserCLib.c.drawutils
             fontutils
             memory
             userlib
             wimputils
           h.drawutils
             fontutils
             macros
             memory
             userlib
             wimputils
           o.drawutils
             fontutils
             memory
             userlib
             wimputils
```

Applications often need to be able to select fonts from those available. There is a Risc OS library called FontSelect which provides a selector window. However, many applications – *Impression* for one – use menus as a more convenient method. The major font families appear on a menu (Trinity, Corpus and so on) and fonts within those families as sub-menus (Trinity.Bold, Bold.Italic, Medium and so on).

C.FontUtils provides two routines to allow this: font_utils_menu takes a title string and a font_desc pointer as arguments, returning the handle of a menu structure. This contains a menu of font families as well as x and y font-size menus. The menus will be ticked appropriately for the font in your font_desc structure. You may have more than one font that needs changing (as in *Timely*) and you may therefore use font_utils_menu several times to append different font menus to your overall menu tree. When the user selects something from the menu, control is passed to your menu handler.

This should, in turn, detect that the user has selected a new font or size from a font menu. In this case font_utils_menu_select can be called, passing to it the tail of the hit[] array that describes the user's menu selection and the font_desc variable appropriate to the font being changed.

This will update the font_desc block and return TRUE or FALSE if the font was changed in any way. If it was, you can redraw any windows in which the font is used. The routine font_utils_tickmenu provides a means of reflecting the currently chosen font and size in a font menu without recreating the whole menu structure (if for example, the user clicks with Adjust on a new font size and the menu remains open).

MEMORY

Another library that could be useful in many applications, is *C.Memory*, that provides extra memory management routines. In standard C, malloc is used to grab some memory, free is used to release it when no longer needed. Risc OS, being flexible, can allocate more memory to an application when it is needed or take some back when it is not. To fit in with this flexibility the flex library is provided. A flex block is like a block of memory allocated with malloc, except that it may be shifted about so that no memory is ever wasted.

You may well wonder how to find the allocated memory? Well, each flex block has an anchor – an integer variable in fixed memory (in other words not in a flex block) which contains the address of the memory block. Whenever you need to refer to the memory, you look up the address in the anchor, which may have changed since you last referred to it. When talking to the flex library you always pass the address of your anchor (cast to flex_ptr). Using flex blocks can be tricky at times – you must be careful not to make a copy of the anchor and use it in situations when the anchor may have changed, for example:

```
char *p=(char*) anchor;
flex_realloc((flex_ptr) &anchor,size+42);
strcpy(p,"Hello");
```

In this case, anchor may be shifted by the flex_realloc and you may be copying the string "Hello" into hyperspace!

Claiming and releasing memory can take time, so it is useful to have a block of memory that goes up and down in chunks (say 1K each) rather than in individual bytes. *C.Memory* provides such a facility with its own structure memory_block. This contains an anchor, like a flex block, a size and a used field which reflects how many of the currently allocated bytes are physically in use. It is up to the user to ensure this

YELLOW PAGES

Timely can be obtained from yellow pages and was written using Acorn C (release 3). To compile the source, which comes in several parts, you will first need to ensure you have all the relevant files in all the correct places. The box opposite shows the plan. Filenames in bold need to be entered by you. Those in italics will be created by the *MakeDat* program. Remaining files will be compiled for you.

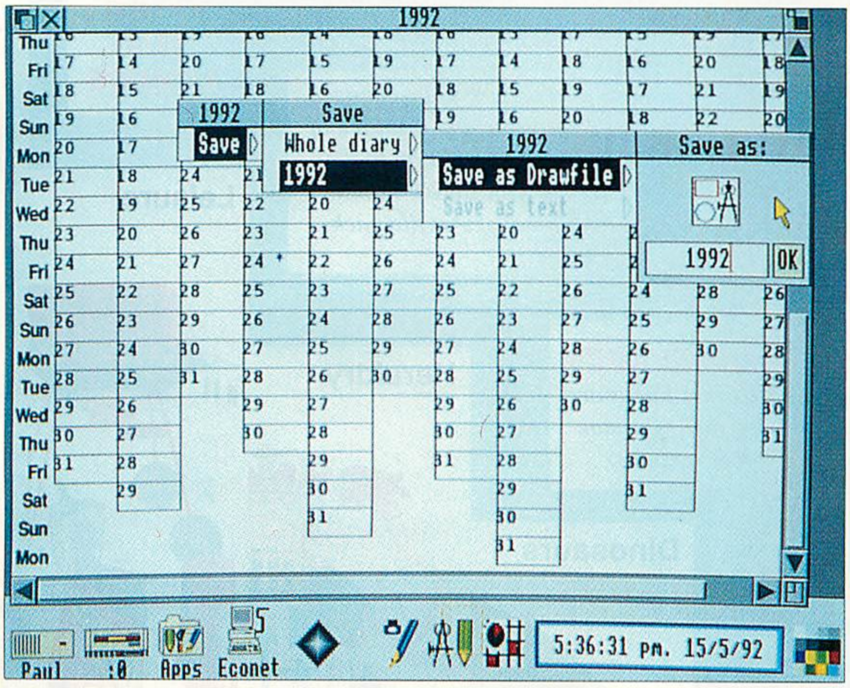
Files are to be placed in two directories – the Timely application directory which, for simplicity, I will assume is in $, and UserCLib which I will also assume is in $. If you want to relocate these, you need to adjust makefiles and so on accordingly. The source of the main application is *$.!Timely.C.Timely* but because many of the routines may be useful for other applications, I have included them as separate files in $.UserCLib. They appear in full in the C directory there, and also as header files in the H directory. One file of useful macro definitions appears in H only (and not in C since it contains no real code). You will need to enter both the C and H files.

The make file for *Timely* will assemble all the components and link them with the main application to produce the file *!RunImage*. Simply go into *!Timely* and type **Make*. The *MakeDat* program creates all the files that are otherwise unlistable (sprites, templates and so on). Enter this and run it inside the *!Timely* directory. You may, of course, like to save yourself some typing and wait until the final version next month. Although the main source code will be enhanced, the libraries will not change.

field is set correctly. Such a block can be initialised with init_memory_block, which takes as one parameter the chunk size. Whenever the block needs to be extended or reduced it will be in multiples of this. Then ensure_memory is used to allocate a number of bytes to a memory block (rounded up to the nearest chunk) and the current allocation will be extended or shrunk accordingly. One routine, ensure_extra_memory, is particularly useful as it makes sure that there are a number of extra bytes free, beyond those currently used. Often this call will return without needing to extend the block.

If you were to write a wordprocessor for example, where the text were stored in a memory block which was extended by one byte with every letter typed and reduced by one byte with every deletion an inordinate amount of time would be spent shuffling memory. Instead, the memory block could be declared as being in 1K chunks so only every 1024th character typed would cause the block to be stretched by 1K.

Memory blocks are used by *Timely* to store each viewer as a *Draw* diagram and by *C.DrawUtils* which uses one to store an individual *Draw* object before it is added to a complete *Draw* diagram.



Saving a Timely set-up as a Draw file

AND THE REST..

C.UserLib is made up of several miscellaneous routines. At the moment only one routine is included, userlib_strcmp, together with a general form of the same routine, userlib_genstrcmp. The former takes two strings, which may contain the wildcards * and #, and compares them. Case is ignored, but userlib_genstrcmp takes an extra parameter which should be FALSE if case is not to be ignored. The routine will be used directly by *Timely* next month to look for specific birthdays and other diary entries. Also, the routine is used by *C.FontUtils* to find the closest font to the one requested.

Finally, the *C.DrawUtils*, *C.WimpUtils* libraries provide routines to create and manipulate *Draw* diagrams and to ease the use of the Wimp libraries. They are used extensively by *Timely* and will be described in detail in the last article of this series. Meanwhile take a look at our book review below. It could put you firmly on the road to C mastery.

C you all, same place, next month.

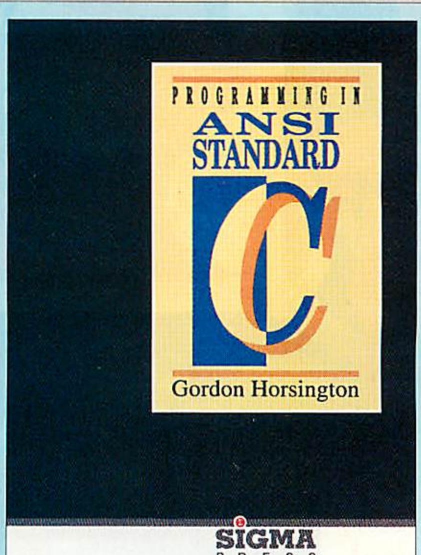
BY THE BOOK

PROGRAMMING IN ANSI STANDARD C
Gordon Horsington
Published by Sigma Press
Price: £14.95

We mentioned in the first part of this series that it was a good idea to invest in a book. Although this series is intended to give you an idea of how to impelement C on your Archimedes, it is not possible to cover absolutely everything.

So, with this in mind, we chose to look at a book from Sigma Press which represents a comprehensive introduction to Acorn C. This type of C, like the MicroSoft C on the PC, conforms to the Ansi standard.

An early chapter compares Basic with C, using many short examples in both languages, which will be valuable to those who have a understanding of Basic but want to branch out into C. Subsequent sections explore in logical progression the features of C from the preprocessor right through to structures and file handling. The book has a reliable and consistent feel – important for any guide that is designed for newcomers. Examples are the key method of explanation and make a refreshing change from unfriendly syntax tables.



But, learning C is of little use usless you can use this knowledge to tackle real problems. Techniques are included in the book, linked lists are described in the section on data structures for example, but they are perhaps a little thin on the ground. Although you could develop a sound understanding of C's syntax, it might take a more advanced book to show ex-Basic programmers the new possibilities that C brings.

The programming examples, although plentiful, in some cases could be more wisely constructed. I suppose all authors must find a balance between simplicity and usefulness. For example, the rule, 'only use recursion if it improves the efficiency of a program,' is quite rightly given, but broken on the previous page by an example which calculates factorials recursively!

As with any review of a book about a standard language like Ansi C, it is much easier to pick holes than show benefits. Plus points invariably come down to how well the author explains things and Gordon Horsington's explanations are very clear indeed.

It would be unfair in a review this size to let my fairly minor reservations about the book mar the picture of what is a soundly written and well-organised introduction to Ansi C. A bonus is that it also contains specific advice for Archimedes users.

This guide covers the groundwork more than adequately and I doubt whether the 250-odd pages could be more effectively used with the new C programmer in mind.

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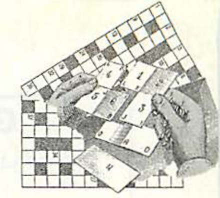
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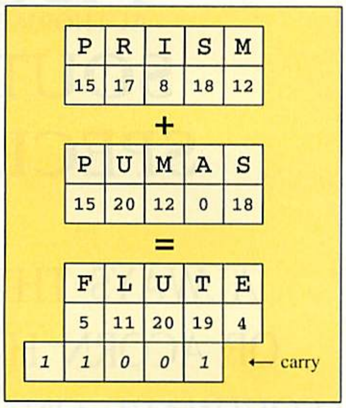
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£25 PRICE WORD SUMS



If we number the letters of the alphabet starting at 0 (A=0, B=1, C=2...Z=25) we can represent words in base 26. For example, CAB=(2*26²)+(0*26)+1=-1353. If we add the values of two words together, we occasionally form new words. The figure shows one example: Prism + Pumas = Flute. Note that we ignore the carry from the P+P to give us a five letter answer. Now consider the word Clank. There are two five letter words whose values added together in the way just described produce the answer Clank. The prize puzzle is to find these two words.

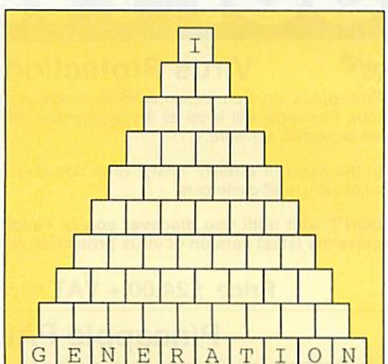
To make it a little easier, here are three clues. Firstly, the two words share the same last two letters. Secondly, the two words each contain only one vowel. These vowels are different and occupy different places in their respective words. And finally, the two words are connected in meaning.

When you have found the two words, write them on a postcard or piece of paper with your address, marking it July 1992 Prize Puzzle and send it to: BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. The closing date is Friday 10th July 1992.

PYRAGRAM

Consider this pyramid. Starting with I at the top, add one letter to each row and rearrange the letters you have to form a valid English word. At the bottom you should be able to form Generation. To make it easier, there are clues for the eight intermediate stages, although these are in no particular order:

1. Draw
2. Going in
3. The thing
4. Confine
5. Passive
6. Orange
7. Hiring
8. Grow weary



SOLITAIRE

Here's one of our famous one-liners for those who like such things. It's a version of the classic one-player game. Use Z, X, C and F to move the cursor. Press Ctrl with these to jump one peg with another. As you'll know, the object is to end up with a single peg in the middle of the board. The game is best entered on several lines and squashed using our regular function key squasher as shown. (Type in the listing, enter the function key definition and press f0).

By the way, be careful to get the right number of spaces and stars in line 30. The string in quotation marks has four spaces at the start and end.

```
10DIMb 81
20y$="***      ***"
30$b=STRING$(12," ")+y$+"    *******  ***.***  *******
  "+y$
40WIDTH9
50y=40+b
60CLS
70REPEAT
80REPEAT
90REPEAT
100x=y
110VDU30
120PRINT$b
130VDU31,(x-b)MOD9,(x-b)DIV9
140REPEAT
150k=INSTR("ZXCF",CHR$(64ORGETAND&DF))
160d=(k=1)-(k=2)-9*(k=3)+9*(k=4)
170y=x+d
180UNTIL?y>32
190UNTILINKEY-2AND?x+?y=84
200UNTILy?d=46
210?x=46
220?y=46
230y=y+d
240?y=42
250UNTILFALSE
```

```
*KEY0 f=PA.+4:t=f:b=&F5:REP.c=(b<>&F5):?t=-?t*NOTc-
58*
c:t=t-c:x=f?-1:FOR i=1TOx-
4:b=?f:?t=b:f=f+1:t=t+1:N.:f
=f+4:U.f?-3=&FF:?t=&D:t?1=&FF:?(PA.+3)=t-PA.|M
```

Function key definition to squash listings on to one line.

SYNONANAGRAMMATISATION!

Each of these words has three synonyms – words with similar meanings. These synonyms have been scrambled to form new words. Can you unscramble them?

OPEN: *TROVE, BRAILLE, BINGE*
PRONOUNCE: *PEAKS, AGONISED, MEDICAL*
PEERS: *SQUEAL, SINECURISTS, LASER*
SEPARATE: *SPILT, ROYALIST, SERGEANT*
BANDS: *SITE, CLERICS, DISCONSOLATE*

SIX APPEAL SOLUTION

The solution to May's prize puzzle is given below. The winner is M A Aldridge of Derby.

S	T	O	C	K	S
T	Y	R	A	N	T
O	R	A	T	O	R
C	A	T	T	L	E
K	N	O	L	L	S
S	T	R	E	S	S

JUNE'S SOLUTIONS

A little sum-thing

The value of D4 is 4. To make D4 zero, change A1 to -3.

Keyword search

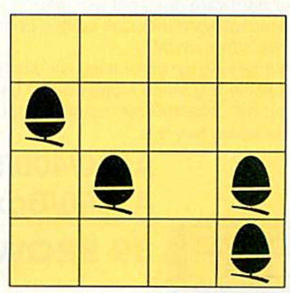
AND, ABS, ADVAL, BGET, BPUT, COLOUR, CALL, CHAIN, CLEAR, CLG, CLS, COS, DATA, DIM, DRAW, END, ENVELOPE, ELSE, FOR, FALSE, GCOL, INPUT, MOVE, NEXT, OPENIN, PRINT, PLOT, REPEAT, READ, REM, STEP, SIN, SOUND, STOP, TAN, THEN, TRUE, UNTIL, VDU, WIDTH.

Vowel trouble

TP=UTOPIA, RP=EUROPE, GN=IGUANA, CC=ACACIA, NS=NAUSEA, NS=UNEASE, RL=AERIAL, QT=EQUATE, LS=LIAISE, DN=IODINE, BG=BOOGIE, LG=LEAGUE.

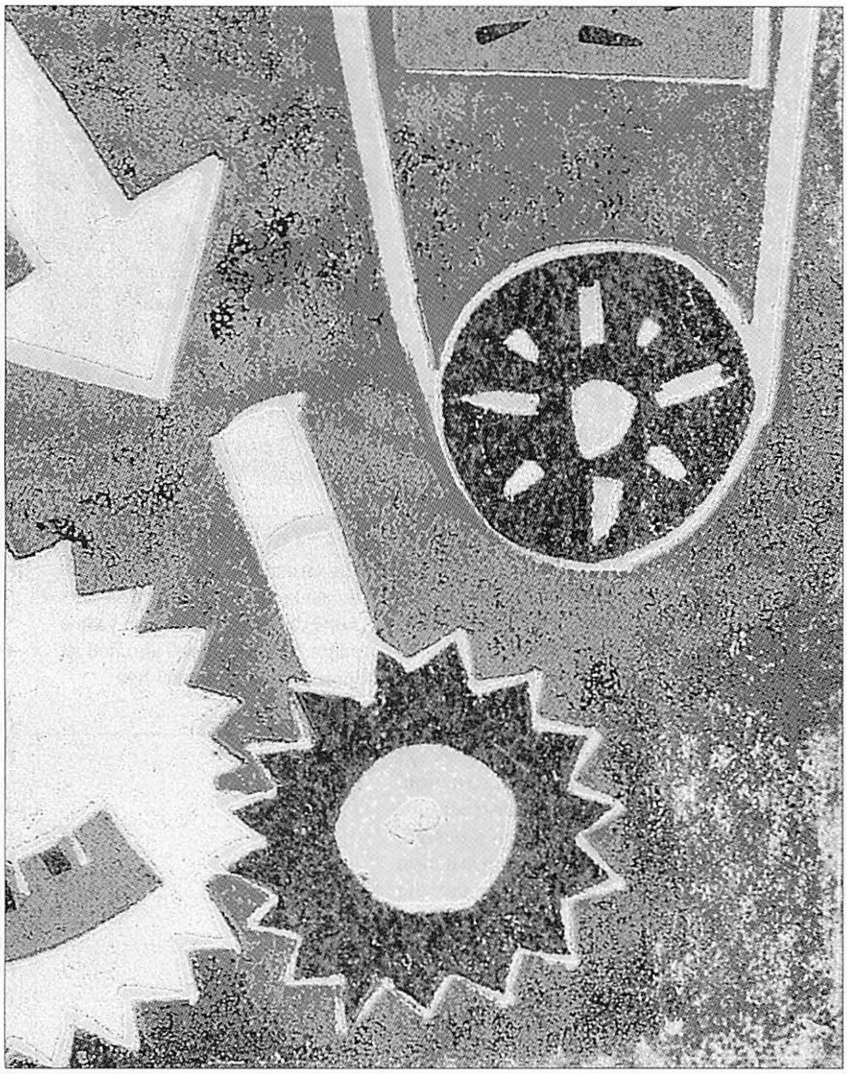
SQUARE-CUT

Can you divide this grid into four identically shaped pieces so that each piece contains one Acorn?



ASSEMBLY LINE

Dave Lawrence introduces you to loops and conditions


PAUL SCHOFIELD

In our first article on the Arm processor we issued some dire warnings about what it could and could not do. As you may remember, we told you that you have to do without all those useful structures that high level languages, such as Basic, can provide. No convenient statements, such as FOR, NEXT, CASE, REPEAT and so on, can be found in Arm code.

Before friendly languages such as BBC Basic appeared, nearly all languages were based on the machine code of the processor. The modern Archimedes' Basic 5 bears little resemblance to the original Basic of long ago. But, even in those days, you had commands such as PRINT, INPUT, GOTO, GOSUB, IF and, in most cases, FOR and NEXT. Just about any modern day 'structure' could be emulated; it just required a little thought and a dramatic reduction in the readability of your program. Some modern assembly languages do provide high-level commands – these are the so-called Ciscs, or Complex Instruction Set Computers. With the Arc we are, of course using a Risc, or Reduced Instruction Set Computer and we have to use more basic techniques.

Most of the structures we are used to are based on comparisons (IFs) and branches (GOTOs), so this is a good place to start. A branch in Arm code must win the award for having the simplest (and shortest) mnemonic – the letter B.

B for Branch; what could be easier! The instruction takes one parameter – the location to branch to – and this is the same as the line number after a GOTO. The location will normally be the name of a label (prefixed by a '.') elsewhere within the program. Our example listing, *Arm1*, is not the most sensible program ever written, but I hope it demonstrates the point.

```
1Ø REM >ARM1
2Ø REM By Dave Lawrence
3Ø REM For 32 bit machines
4Ø REM (C) BAU July 1992
5Ø :
6Ø DIM code 1ØØ
7Ø link=14
8Ø pc=15
9Ø FOR pass=Ø TO 2 STEP 2
1ØØ P%=code
11Ø [OPT pass
12Ø .branchtest
13Ø B      label2
14Ø .label1 B return1
15Ø .label2 B label4
16Ø .label3 B return2
17Ø .label4 B label3
18Ø .return1
19Ø MOV    RØ,#1
2ØØ MOV      pc,link
21Ø .return2
22Ø MOV    RØ,#2
23Ø MOV      pc,link
24Ø ]NEXT
25Ø PRINT "Press SPACE to run code";
26Ø IFGET
27Ø PRINT '"Returned with ";USR(branchtest)
```

In addition to branching, the other component is comparison. The Arm provides four ways to compare and test numbers and the first one we will look at is called CMP, short for CoMPare. Anybody familiar with the 6502 will recognise this instruction. and its use is very simple. For example, if you wanted to see if R0 contained the value 10, you would use the instruction

```
CMP R0,#10
```

You should apply the same rules to the right hand operand, as you do when using ADD, SUB, and so on. You are allowed any constant that can be stored in Acorn's 12-bit notation, or a

register with an optional shift. All the following are valid:

```
CMP R1,R6
CMP R5,#&FF00
CMP R0,R1,LSR #16
CMP R1,R4,LSR R10
```

This is not, in itself, very useful. It's a bit like saying: IF count=10. What happens when count is 10? At the moment nothing, because we don't have a THEN. In fact, what happens when count is not 10? This is where things get tricky, as there is no direct translation for THEN.

IF..THEN

What CMP does is to set the processor's condition flags. You already know a bit about the 'carry flag' in connection with some of the advanced shift operations. There are eight flags in all: four system flags and four result flags. The system flags are beyond the scope of this series, so don't worry about them.

The result flags are more useful, as they show the result of many operations, including CMP. These flags are called: Negative, Zero, Carry and Overflow. After a compare, these flags are set according to the result. They can then be examined, either singly or in combination, to tell us if count was, indeed, equal to 10.

The THEN is not translated as one instruction, but included within the following instructions. This relies on a useful part of the Arm's design, that of conditional execution. Any instruction can be followed by a condition code and the instruction is only executed if the status of the result flags are appropriate to the condition code. Now this may sound like a lot of jargon, but what it all boils down to is this.

If you set the processor's result flags to certain states (with an instruction such as CMP), it is possible to execute or ignore subsequent instructions, and alter the linear execution of the instructions in memory. All this theory can be illustrated with a simple example:

```
CMP R0,#10
BEQ label1
```

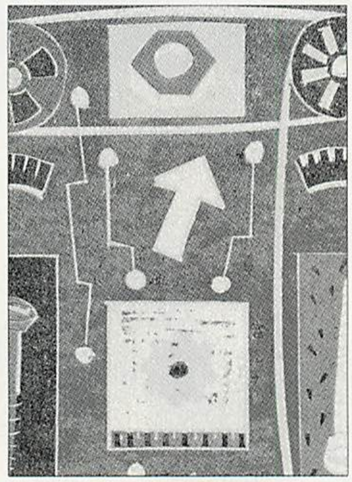
This translates to if R0 = TEN THEN GOTO label1. The if comes from the extra EQ after the B, where EQ is short for equals. The opposite to EQ is called NE or Not Equal. Obviously this will be true if the parameters for comparison are not the same. A sensible example is now possible, such as

```
CMP  R1,R2
MOVEQ R1,#0
ADDNE R1,R1,#1
```

Here, if R1 is the same as R2, then R1 is set to 0, (the MOVEQ) otherwise R1 is incremented by one (the ADDNE). Note that we have added the condition codes to the MOV and ADD instructions and, as a result, made their execution conditional on the result of the compare. This is one of the best features of the Arm. Very few processors can do this.

You are unlikely to need to know about all of the result flags. Although they all have logical connections with their associated results, these are not always obvious. For example, the EQ condition is true if the zero flag, Z is set.

We are now in a position to start simulating some Basic structures, and we will start with a FOR NEXT loop without a STEP. We know the loop entry conditions, how many times it will be executed and what the value of the control variable will be at any point.



YELLOW PAGES

The second two programs mentioned in this tutorial, *Arm2* and *Arm3* can be copied in from yellow pages. Subscribers will also find all three programs on their free monthly disc.

When translating this to Arm code, we will need to set aside a register for our control variable, initialise it at the start, perform the operations needed within the loop and finally increment the control register and loop back if we have not reached the TO value.

TYPICAL LOOPS

The program *Arm2* (found in yellow pages) shows how a typical loop might be coded. This piece of code is a direct translation of the following lines of Basic:

```
FOR i=1 TO 10
PRINT "*";
NEXT
```

Have a look at the listing in yellow pages in more detail: line 130 initialises the control register to 1, line 140 defines a label for the main body of loop. Line 150 is an operating system call that prints a star – but don't worry about this for the moment.

Line 160 adds one to the control register, line 170 compares it to 11. But why 11? Well, in a FOR loop, the control variable takes all values between the = value and the TO value inclusively. So our control register must start at one and finish by going through the loop with a value of 10. Therefore, after we increment it, it will have a value of 11. Line 180 is the conditional branch that takes us back to the label loop if the control has not yet reached 10. As always, MOV pc,link is used to return us to Basic. It would be perfectly acceptable to change the last two lines to:

```
MOVEQ pc,link
B   loop
```

This would be interpreted as: exit if the loop has finished, otherwise loop back. However it is best to keep the code as obvious as possible; starting at the top and finishing at the bottom. There are a couple of ways of making the comparison with one-greater-than-the-end-value less confusing in the code. The first would be:

```
.loop
SWI  256+ASC"*"
CMP  R1,#10
ADDNE R1,R1,#1
BNE  loop
MOV  pc,link
```

In other words, do not increment the control register (and branch back) once the control variable is equal to 10. (Note that it is quite legal to have more than one conditional instruction in a row.) The other method, which is closer to the way a 'real' FOR NEXT loop works is to branch back if the control variable is less than or equal to the control variable. This can be done using one of the other condition codes, LE or 'Less than or Equal'. To try this out, change the following lines:

```
170 CMP R1,#10
180 BLE loop
```

This gives a more obvious end value, and the loop runs with all values from one to 10, then stops when it reaches 11 which is not less than or equal to 10. To finish off this month, have a look at the program *Arm3* and try to work out what it does, before you run it.

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YELLOW PAGES

Program	Page	BBC B B+	B+/ 128	Master 128	Master Compact	Electron	6502SP/ Turbo	ADFS	Econet	Shadow Ram	Archimedes/ A3000/A5000	Monthly disc
Wired for Sound	62							*	*		*	*
*INFO	69											
Info 1 - 2		*	*	*	*	*	*	*	*	*		*
Info 3 - 7								*	*		*	*
Info 8		*	*	*	*	*	*	*	*		*	*
Info 8 - 13								*	*		*	*
C Programming	77							*	*		*	*
Arm Programming	83							*	*		*	*

Typing in listings from the yellow pages.

The yellow pages are subdivided into article headings. Each article heading corresponds with its article in the magazine.

So for instance to find listing three of *INFO in the yellow pages (IntDemo) look for the *INFO heading, then follow the listings through until you get to listing three.

At the beginning of the program are a few lines that tell you what machines it works on. This information can also be derived from the table above.

For Archimedes owners it may not be immediately obvious how to actually type in the listings. By pressing Function key 12 you can access the command line. From here type BASIC and the Archimedes will enter the Basic language. You may like to type MODE 12, which will turn the screen to white on black.

Then simply copy each line of the program in turn after the '>' prompt, pressing RETURN when finished. Save the program onto disc by typing SAVE"<filename>". It can then be run by typing RUN. You will probably need to debug it as you may have made some typing errors.

When you have finished debugging save the program one last time. Then it can either be double-clicked upon from the desktop, or loaded using LOAD"<filename>".

A more detailed description of how to type in listings from the yellow pages appears in BBC Acorn User August 91.

WIRED FOR SOUND

Listing 1 - Volume

```
   10 REM > Volume (Sound1)
   20 REM by David Radford
   30 REM for Arc only
   40 REM (c) BAU July 1992
   50 :
   60 INPUT "Enter filename: "f$
   70 SYS "OS_File",5,f$ TO a%,,,,l%
   80 IF a%<>1 THEN l%=16
   90 DIM buffer% l%
  100 SYS "OS_File",255,f$,buffer%,0
  110 :
  120 PRINT"Basic or machine code (B/M)
? ";
  130 REPEAT G$=GET$:UNTIL G$="B" OR G$=
"M"
  140 PRINT G$
  150 IF G$="M" THEN PROCassem
  160 A%=buffer%+1:B%=l%-1
  170 :
  180 PRINT"Measure volume or scale volu
me (M/S) ? ";
  190 REPEAT H$=GET$:UNTIL H$="M" OR H$=
"S"
  200 PRINT H$'
  210 :
  220 IF H$="M" THEN
  230 TIME=0
  240 IF G$="M" THEN vol%=USRmeasure ELS
E vol%=FNmeasure(A%,B%)
  250 PRINT"Volume level: ";vol%
  260 PRINT"Time taken: ";INT(TIME/100+0
.5);" secs"
  270 ELSE
  280 IF G$="M" THEN vol%=USRmeasure ELS
E vol%=FNmeasure(A%,B%)
  290 PRINT"Volume level: ";vol%
  300 INPUT"Scale to level (0-127): "lev
el%
  310 C%=(level%/vol%)*128
  320 IF G$="M" THEN CALL scale ELSE PRO
Cscale(A%,B%,C%)
  330 PRINT "Output filename (or RETURN
for same):"
  340 INPUT ""o$
  350 IF o$="" THEN o$=f$
  360 SYS "OS_File",10,o$,&D3C,,buffer%,
buffer%+l%
  370 ENDIF
  380 END
  390 :
  400 DEF FNmeasure(pointer%,length%)
  410 LOCAL vol%,a%:vol%=0
  420 WHILE length%>0
  430 a%=?pointer%:pointer%+=1
  440 IF a%>127 THEN a%=256-a%
  450 IF a%>vol% THEN vol%=a%
  460 length%-=1
  470 ENDWHILE
  480 =vol%
  490 :
  500 DEF PROCscale(pointer%,length%,mul
t%)
  510 LOCAL a%
  520 WHILE length%>0
  530 a%=?pointer%
  540 IF a%>127 THEN a%=-(((256-a%)*mult
%) >>> 7) ELSE a%=(a%*mult%) >>> 7
  550 ?pointer%=a%
  560 pointer%+=1:length%-=1
  570 ENDWHILE
  580 ENDPROC
  590 :
  600 DEF PROCassem
  610 DIM code% 128
  620 FOR PASS=0 TO 2 STEP 2
  630 P%=code%
  640 [OPT PASS
  650 :
  660 .measure
  670 MOV R2,R0
  680 MOV R0,#0
  690 CMP R1,#0
  700 MOVLE PC,R14
  710 .measureloop
  720 LDRB R3,[R2],#1
  730 TST R3,#128
  740 RSBNE R3,R3,#256
  750 CMP R3,R0
  760 MOVGT R0,R3
  770 SUBS R1,R1,#1
  780 BNE measureloop
  790 MOV PC,R14
  800 :
  810 .scale
  820 CMP R1,#0
  830 MOVLE PC,R14
  840 .scaleloop
  850 LDRB R3,[R0]
  860 TST R3,#128
  870 RSBNE R3,R3,#256
  880 MUL R3,R2,R3
  890 MOV R3,R3,LSR #7
  900 RSBNE R3,R3,#0
  910 STRB R3,[R0],#1
  920 SUBS R1,R1,#1
  930 BNE scaleloop
  940 MOV PC,R14
  950 ]NEXT
  960 ENDPROC
```

Listing 2 - Pitch

```
   10 REM > Pitch (Sound2)
   20 REM by David Radford
   30 REM for Arc only
   40 REM (c) BAU July 1992
   50 :
   60 INPUT "Enter filename: "f$
   70 SYS "OS_File",5,f$ TO a%,,,,l%
   80 IF a%<>1 THEN l%=16
   90 DIM buffer% l%
  100 SYS "OS_File",255,f$,buffer%,0
  110 :
  120 INPUT "Enter current pitch (eg.C3)
 : "a$
  130 INPUT "Enter new pitch : "b$
  140 PRINT "Enter destination filename
(or RETURN for same) :"
  150 INPUT ""o$
  160 PROCassem
  170 :
  180 o1%=VAL(RIGHT$(a$,1))*12
  190 o2%=VAL(RIGHT$(b$,1))*12
  200 a$=LEFT$(a$,LENa$-1)
  210 b$=LEFT$(b$,LENb$-1)
  220 c$="C C#D D#E F F#G G#A A#B"
  230 p1%=o1%+(INSTR(c$,a$)-1)/2
  240 p2%=o2%+(INSTR(c$,b$)-1)/2
  250 pd%=p2%-p1%
  260 *TUNING 0
  270 SYS "Sound_Pitch",pd%/12*&1000+&25
55 TO phaseacc%
  280 :
  290 file%=OPENOUT o$
  300 IF file%=0 THEN PRINT"Unable to op
en file":END
  310 SYS "OS_File",18,o$,&D3C
  320 BPUT #file%,?buffer%
  330 A%=buffer%+1
  340 B%=l%-1
  350 C%=file%
  360 D%=phaseacc%
  370 CALL alterpitch
  380 CLOSE #file%
  390 END
  400 :
  410 DEF PROCassem
  420 DIM code% 1024
  430 FOR PASS=0 TO 2 STEP 2
  440 P%=code%
  450 [OPT PASS
  460 :
  470 .outputbuffer
  480 ]:P%+=256:[OPT PASS
  490 :
  500 .alterpitch
  510 STMFD R13!,{R14}
  520 MOV R4,#0
  530 ADR R5,outputbuffer
  540 MOV R6,R5
  550 ADD R8,R6,#256
  560 ADD R1,R0,R1
  570 .pitchloop
  580 ADD R7,R0,R4,LSR #24
  590 CMP R7,R1
  600 BGE finish
  610 LDRB R7,[R0,R4,LSR #24]
  620 STRB R7,[R5],#1
  630 CMP R5,R8
  640 BLGE writebuffer
  650 ADDS R4,R4,R3
  660 ADDCS R0,R0,#256
  670 B pitchloop
  680 :
  690 .finish
  700 CMP R5,R6
  710 BLGT writebuffer
  720 LDMFD R13!,{PC}
  730 :
  740 .writebuffer
  750 STMFD R13!,{R0-R4,R14}
  760 MOV R0,#2
  770 MOV R1,R2
  780 MOV R2,R6
  790 SUB R3,R5,R6
  800 SWI "OS_GBPB"
  810 MOV R5,R6
  820 LDMFD R13!,{R0-R4,PC}
  830 ]NEXT
  840 ENDPROC
```

Listing 3 - WaveGen2

```
   10 REM > WaveGen2 (Sound3)
   20 REM by David Radford
   30 REM for Arc only
   40 REM (c) BAU July 1992
   50 :
   60 SOUND ON
   70 range$="Full octave"
   80 octave%=0
   90 maxlength%=320*1024
  100 wavex%=32:wavey%=800
  110 pitchx%=728-60:pitchy%=800
  120 ampx%=728-60:ampy%=500
  130 barx%=56:bary%=616:barys%=32
  140 filetype%=&21A
  150 DIM buffer% maxlength%
  160 DIM file% &7A0,voice%(8)
  170 DIM c%(4),n%(31)
  180 FOR T%=0 TO &79C STEP 4:file%!T%=0
:NEXT
  190 FOR T%=&A0 TO &19C STEP 4:file%!T%
=&80808080:NEXT
  200 file%?&20=128
  210 DIM harmenv% 512
  220 FOR T%=0 TO 252 STEP 4:harmenv%!T%
=&80808080:harmenv%!(T%+256)=0:NEXT
  230 recalc%=TRUE
  240 length%=200
  250 foreign%=FALSE
  260 source%=0
  270 voices%=4
  280 MODE 12:OFF
  290 *POINTER 1
  300 PROCinitcode
  310 hear%=FALSE:!playflag=FALSE
  320 ON ERROR REPORT:PRINT" at line ";E
RL:CALL restore:END
  330 PRINTTAB(14,1);"Waveform"
  340 PRINTTAB(54,1);"Envelopes"
  350 PRINTTAB(47,20);"Length:"
  360 PRINTTAB(62,20);"Octave:"
  370 PRINTTAB(65,22);RIGHT$(CHR$32+STR$
octave%,2)
  380 FOR T%=1 TO 10:PRINTTAB(0,T%+11);
  390 IF T%<10 THEN PRINTSPC(1);T% ELSE
PRINT;T%
  400 NEXT
  410 RECTANGLE wavex%-2,wavey%-128-4,51
5,263
  420 RECTANGLE pitchx%-2,pitchy%-128-4,
515,263
  430 RECTANGLE ampx%-2,ampy%-4,515,136
  440 PROCnewfile
  450 PROCdrawbuttons
  460 quit%=FALSE
  470 REPEAT
  480 REPEAT
  490 IF !playflag THEN PROCplay
  500 MOUSE x%,y%,b%
  510 UNTIL b%<>0
  520 i%=FNicon(x%,y%)
  530 CASE i% OF
  540 WHEN 0,1,2,3
  550 IF source%<>i% THEN
  560 source%=i%
  570 IF i%=0 THEN a%=sine ELSE IF i%=1
THEN a%=triangle ELSE IF i%=2 THEN a%=sq
uare ELSE a%=sawtooth
  580 !sourcewaveptr=a%
  590 CALL calcharmonics
  600 PROCdrawbuttons
  610 recalc%=TRUE
  620 IF hear% OR !playflag THEN CALLcal
csample:IF !playflag THEN recalc%=FALSE
  630 GCOL0:RECTANGLE FILL wavex%,wavey%
-128,511,255
  640 GCOL6:LINE wavex%,wavey%,wavex%+51
1,wavey%
  650 A%=&2A0:B%=wavex%:C%=wavey%
  660 E%=4:F%=128:GCOL 7:CALL redraw
  670 ENDIF
  680 WHEN 4
  690 IF hear% THEN
  700 MOUSE RECTANGLE 0,0,1279,1023
  710 !alternative=0
  720 SOUND 1,&100,&7000,1
  730 !samplelen=length%*256
  740 recalc%=TRUE
  750 ELSE
  760 IF !playflag THEN
```

```
 770 !playflag=FALSE
 780 VOICES 1
 790 ENDIF
 800 u%=bary%-barys%*9-8
 810 MOUSE RECTANGLE 0,u%,wavex%+513,10
23-u%
 820 !samplelen=256
 830 !alternative=harmenv%
 840 recalc%=TRUE:CALL calcsample
 850 SOUND 1,&17F,&4000,100
 860 ENDIF
 870 hear%=NOT hear%
 880 PROCdrawbuttons
 890 WHEN 5
 900 !playflag=NOT!playflag
 910 PROCdrawbuttons
 920 IF NOT!playflag THEN
 930 VOICES 1:SOUND 1,0,100,10
 940 IF foreign% THEN
 950 MOUSE RECTANGLE 0,0,1279,1023
 960 recalc%=TRUE:!samplelen=length%*25
6
 970 foreign%=FALSE
 980 SYS "Sound_Configure",0,,48
 990 ENDIF
 1000 ELSE
 1010 IF recalc% THEN CALLcalcsample:rec
alc%=FALSE
 1020 VOICES voices%
 1030 FOR T%=1 TO voices%:SOUND T%,0,100
,10:NEXT
 1040 n%()=0:c%()=0
 1050 ENDIF
 1060 WHEN 6:PROCsavedata
 1070 WHEN 7:PROCloaddata
 1080 WHEN 8:PROCcommand
 1090 WHEN 9:PROCsavesample
 1100 WHEN 10:quit%=TRUE
 1110 WHEN 11:PROCreset(&1A0,0,0)
 1120 WHEN 12:PROCreset(&A0,&80808080,1)
 1130 WHEN 13:PROCalterlength(-1,700,276
)
 1140 WHEN 14:PROCalterlength(1,844,276)
 1150 WHEN 15,16
 1160 voices%=(i%-14)*2
 1170 IF !playflag THEN VOICES voices%
 1180 PROCdrawbuttons
 1190 WHEN 17:PROCloadsample
 1200 WHEN 18
 1210 IF range$="Full octave" THEN range
$="Half octave" ELSE range$="Full octave
"
 1220 PROCdrawbuttons
 1230 PROCpitchrange
 1240 recalc%=TRUE
 1250 WHEN 19:PROCalteroctave(-1)
 1260 WHEN 20:PROCalteroctave(1)
 1270 OTHERWISE
 1280 h%=-1:FOR T%=0 TO 9
 1290 IF y%>=bary%-barys%*T% AND y%<bary
%-barys%*T%+20 THEN h%=T%
 1300 NEXT
 1310 IF h%>=0 AND x%>=barx% AND x%<barx
%+258 THEN
 1320 PROCdragbar(barx%,bary%,barys%,h%,
x%,y%)
 1330 ELSE
 1340 IF x%>=ampx%-2 AND x%<ampx%+514 AN
D y%>=ampy%-4 AND y%<ampy%+136 THEN PROC
edit(1)
 1350 IF x%>=pitchx%-2 AND x%<pitchx%+51
4 AND y%>=pitchy%-132 AND y%<pitchy%+132
 THEN PROCedit(0)
 1360 ENDIF
 1370 ENDCASE
 1380 REPEAT
 1390 IF !playflag THEN PROCplay
 1400 MOUSE x%,y%,b%
 1410 UNTIL b%=0
 1420 UNTIL quit%
 1430 MODE 12:*FX 15
 1440 CALL restore
 1450 FOR T%=2 TO 8
 1460 SYS "Sound_AttachVoice",T%,voice%(
T%)
 1470 NEXT
 1480 END
 1490 :
 1500 DEF PROCpitchrange
 1510 LOCAL T%,R%
 1520 IF range$="Full octave" THEN R%=&1
000 ELSE R%=&800
 1530 FOR T%=0 TO 255
 1540 a%=&4555+((T%EOR128)-128)*R%/128+o
ctave%*&1000
 1550 SYS "Sound_Pitch",a% TO pitchtable
!(T%*4)
 1560 NEXT
 1570 ENDPROC
 1580 :
 1590 DEF PROCalteroctave(i%)
 1600 octave%+=i%
 1610 IF octave%>2 THEN octave%=2
 1620 IF octave%<-2 THEN octave%=-2
 1630 PRINTTAB(65,22);RIGHT$(CHR$32+STR$
octave%,2)
 1640 PROCpitchrange:recalc%=TRUE
 1650 ENDPROC
 1660 :
 1670 DEF PROCplay
 1680 LOCAL T%,A%,B%,C%
 1690 FOR T%=0 TO 31:A%=keylist?T%
 1700 IF A%=1 THEN keylist?T%=0
 1710 IF n%(T%)<>0 AND A%=1 THEN SOUND n
%(T%),&100,0,1:c%(n%(T%))=0:n%(T%)=0
 1720 IF n%(T%)=0 AND A%=2 THEN
 1730 C%=0:FOR B%=1 TO voices%:IF c%(B%)
=0 AND C%=0 THEN C%=B%:c%(B%)=255
 1740 NEXT
 1750 IF C%<>0 AND !playflag AND recalc%
 THEN CALL calcsample:recalc%=FALSE
 1760 IF C%<>0 THEN n%(T%)=C%:SOUND C%,&
17F,T%*4+5,100
 1770 ENDIF
 1780 NEXT
 1790 ENDPROC
 1800 :
 1810 DEF PROCdrawbar(x%,y%,v%,c%)
 1820 IF c% THEN
 1830 GCOL 7:RECTANGLE x%,y%,256+2,16
 1840 ENDIF
 1850 IF v%>0 THEN GCOL 1:RECTANGLE FILL
 x%+2,y%+4,v%*2-1,8
 1860 IF v%<128 THEN GCOL 0:RECTANGLE FI
LL x%+v%*2+2,y%+4,(128-v%)*2-1,8
 1870 ENDPROC
 1880 :
 1890 DEF PROCdragbar(bx%,by%,ys%,h%,x%,
y%)
 1900 MOUSE RECTANGLE bx%,by%-ys%*h%,256
+2,16
 1910 x%=-23
 1920 REPEAT
 1930 MOUSE newx%,newy%,b%
 1940 IF newx%>bx%+256 THEN newx%=bx%+25
6
 1950 IF (newx% AND (NOT1))<>x% THEN
 1960 x%=newx% AND NOT 1
 1970 v%=(x%-bx%)/2
 1980 PROCdrawbar(bx%,by%-ys%*h%,v%,0)
 1990 file%?(h%+&20)=v%
 2000 CALL calcharmonics
 2010 recalc%=TRUE
 2020 IF hear% THEN CALL calcsample
 2030 GCOL0:RECTANGLE FILL wavex%,wavey%
-128,511,255
 2040 GCOL6:LINE wavex%,wavey%,wavex%+51
1,wavey%
 2050 A%=&2A0:B%=wavex%:C%=wavey%
 2060 E%=4:F%=128:GCOL 7:CALL redraw
 2070 ENDIF
 2080 UNTIL b%=0
 2090 u%=bary%-barys%*9-8
 2100 IF hear% THEN u%=bary%-barys%*9-8:
v%=wavex%+513 ELSE u%=0:v%=1279
 2110 MOUSE RECTANGLE 0,u%,v%,1023-u%
 2120 ENDPROC
 2130 :
 2140 DEF PROCnewfile
 2150 FOR T%=0 TO 9:PROCdrawbar(barx%,ba
ry%-barys%*T%,file%?(T%+&20),TRUE):NEXT
 2160 !samplelen=length%*256
 2170 IF source%=0 THEN a%=sine ELSE IF
source%=1 THEN a%=triangle ELSE IF sourc
e%=2 THEN a%=square ELSE a%=sawtooth
 2180 !sourcewaveptr=a%
 2190 CALL calcharmonics
 2200 CALL calcsample
 2210 GCOL0:RECTANGLE FILL wavex%,wavey%
-128,511,255
 2220 GCOL6:LINE wavex%,wavey%,wavex%+51
1,wavey%
 2230 A%=&2A0:B%=wavex%:C%=wavey%
 2240 E%=4:F%=128:GCOL 7:CALL redraw
 2250 recalc%=FALSE
 2260 GCOL0:RECTANGLE FILL pitchx%,pitch
y%-128,511,255
 2270 GCOL6:LINE pitchx%,pitchy%,pitchx%
+511,pitchy%
 2280 A%=&1A0:B%=pitchx%:C%=pitchy%
 2290 E%=1:F%=128:GCOL 7:CALL redraw
 2300 GCOL0:RECTANGLE FILL ampx%,ampy%,5
11,128
 2310 A%=&A0:B%=ampx%:C%=ampy%
 2320 E%=1:F%=256:GCOL 2:CALL redraw
 2330 hear%=FALSE:!playflag=FALSE:VOICES
 1
 2340 PRINTTAB(48,22);RIGHT$(STRING$(4,C
HR$32)+STR$length%,4)
 2350 ENDPROC
 2360 :
 2370 DEF PROCreset(A%,v%,w%)
 2380 FOR T%=A% TO A%+252 STEP 4:file%!T
%=v%:NEXT
 2390 GCOL 0
 2400 IF w%=0 THEN
 2410 RECTANGLE FILL pitchx%,pitchy%-128
,511,255
 2420 GCOL6:LINE pitchx%,pitchy%,pitchx%
+511,pitchy%
 2430 B%=pitchx%:C%=pitchy%
 2440 E%=1:F%=128:GCOL 7:CALL redraw
 2450 ELSE
 2460 RECTANGLE FILL ampx%,ampy%,511,128
 2470 B%=ampx%:C%=ampy%
 2480 E%=1:F%=256:GCOL 2:CALL redraw
 2490 ENDIF
 2500 recalc%=TRUE
 2510 ENDPROC
 2520 :
 2530 DEF PROCdrawbuttons
 2540 RESTORE +0
 2550 i%=0:REPEAT
 2560 READ xmin%,ymin%,xmax%,ymax%,a$
 2570 IF a$<>"end" THEN
 2580 IF i%=source% OR (i%=4 AND hear%)
OR (!playflag AND i%=5) OR (i%=15 AND vo
ices%=2) OR (i%=16 AND voices%=4) THEN G
COL 0,1 ELSE GCOL 0,4
 2590 RECTANGLE FILL xmin%+2,ymin%+4,xma
x%-4,ymax%-12
 2600 GCOL 0,7
 2610 RECTANGLE xmin%,ymin%,xmax%-2,ymax
%-4
 2620 IF RIGHT$(a$,1)="$" THEN a$=EVAL(a
$)
 2630 x%=xmin%+xmax%/2-LEN(a$)*8
 2640 y%=ymin%+ymax%/2+14
 2650 MOVE x%,y%:PRINTCHR$5;a$;CHR$4;:OF
F
 2660 ENDIF
 2670 i%+=1:UNTIL a$="end"
 2680 a$=STRING$(3,CHR$32)
 2690 b$="Z X C V B N M Q W E R T Y U I
O P"
 2700 c$=CHR$32+"S D"+a$+"G H J"+a$+"2 3
"+a$+"5 6 7"+a$+"9 0"
 2710 IF NOT !playflag THEN b$=STRING$(4
0,CHR$32):c$=b$
 2720 PRINTTAB(23,30);b$;TAB(23,29);c$
 2730 ENDPROC
 2740 :
 2750 DEF FNicon(x%,y%)
 2760 RESTORE +0:i%=-1:j%=0
 2770 REPEAT
 2780 READ xmin%,ymin%,xmax%,ymax%,a$
 2790 IF x%>=xmin% AND x%<xmax%+xmin% AN
D y%>=ymin% AND y%<ymax%+ymin% THEN i%=j
%
 2800 j%+=1
 2810 UNTIL a$="end" OR i%<>-1
 2820 =i%
 2830 :
 2840 DATA 352,580,180,56,"Sine"
 2850 DATA 352,520,180,56,"Triangle"
 2860 DATA 352,460,180,56,"Square"
 2870 DATA 352,400,180,56,"Sawtooth"
 2880 DATA 352,328,180,56,"Hear"
 2890 DATA 0,156,240,56,"Play sample"
 2900 DATA 480,104,240,56,"Save data"
 2910 DATA 480,156,240,56,"Load data"
 2920 DATA 720,156,80,56,"*"
 2930 DATA 800,156,240,56,"Save sample"
 2940 DATA 1040,156,240,56,"Quit"
 2950 DATA 600,420,220,56,"Reset pitch"
 2960 DATA 820,420,220,56,"Reset amp."
 2970 DATA 700,276,56,56,"<"
 2980 DATA 844,276,56,56,">"
 2990 DATA 0,104,240,56,"2 Notes"
 3000 DATA 240,104,240,56,"4 Notes"
 3010 DATA 240,156,240,56,"Load sample"
 3020 DATA 1040,420,220,56,range$
 3030 DATA 972,276,56,56,"<"
 3040 DATA 1080,276,56,56,">"
 3050 DATA 0,0,0,0,"end"
 3060 :
 3070 DEF PROCsmallwindow
 3080 VDU 28,0,31,79,25,12
 3090 ON:MOUSE OFF:*FX 15
 3100 ENDPROC
 3110 :
 3120 DEF PROCfullwindow
 3130 VDU 12,26
 3140 MOUSE ON:OFF
 3150 PROCdrawbuttons
 3160 IF !slot=0 THEN CALL setupsound
 3170 IF !playflag THEN VOICESvoices%
 3180 ENDPROC
 3190 :
 3200 DEF PROCcommand
 3210 LOCAL ERROR
 3220 PROCsmallwindow
 3230 ON ERROR LOCAL PRINT'REPORT$;" (Er
ror &";~ERR;")"
 3240 *FX 15
 3250 REPEAT
 3260 INPUT"*"a$
 3270 OSCLI(a$)
 3280 UNTIL a$=""
 3290 PROCfullwindow
 3300 ENDPROC
 3310 :
 3320 DEF PROCedit(w%)
 3330 IF w%=0 THEN
 3340 A%=&1A0:B%=pitchx%:C%=pitchy%
 3350 E%=1:F%=128:col%=7
 3360 MOUSE RECTANGLE pitchx%,pitchy%-12
8,511,255
 3370 ELSE
 3380 A%=&A0:B%=ampx%:C%=ampy%
 3390 E%=1:F%=256:col%=2
 3400 MOUSE RECTANGLE ampx%,ampy%,511,12
8
 3410 ENDIF
 3420 mousex%=-1:mousey%=-1
 3430 REPEAT
 3440 REPEAT
 3450 MOUSE h%,i%,j%
 3460 h%=h% AND &FFFE:i%=i% AND &FFFC
 3470 IF !playflag THEN PROCplay
 3480 UNTIL h%<>mousex% OR i%<>mousey% O
R j%=0
 3490 recalc%=TRUE
 3500 IF mousex%=-1 THEN mousex%=h%:mous
ey%=i%
 3510 IF h%=mousex% THEN
 3520 file%?(A%+(h%-B%)/2)=(i%-C%)
 3530 x1%=h%-2:x2%=h%+2
 3540 ELSE
 3550 k%=mousex%:m%=h%
 3560 o%=mousey%:p%=i%
 3570 IF k%>m% THEN SWAP k%,m%:SWAP o%,p
%
 3580 x1%=k%-2:x2%=m%+2
 3590 k%=(k%-B%)/2:m%=(m%-B%)/2
 3600 o%=(o%-C%):p%=(p%-C%)
 3610 FOR q%=k% TO m%:file%?(A%+q%)=o%+I
NT(0.5+(q%-k%)*(p%-o%)/(m%-k%))
 3620 NEXT
 3630 ENDIF
 3640 IF x1%<B% THEN x1%=B%
 3650 IF x2%>B%+511 THEN x2%=B%+511
 3660 GCOL 0
 3670 IF w%=0 THEN RECTANGLE FILL x1%,C%
-128,x2%-x1%,255 ELSE RECTANGLE FILL x1%
,C%,x2%-x1%,128
 3680 IF w%=0 THEN GCOL 6:LINE x1%,C%,x2
%,C%
 3690 GCOL col%:CALL redraw
 3700 mousex%=h%:mousey%=i%
 3710 UNTIL j%=0
 3720 MOUSE RECTANGLE 0,0,1279,1023
 3730 ENDPROC
 3740 :
 3750 DEF PROCalterlength(d%,n%,p%)
 3760 TIME=0:length%+=d%
 3770 REPEAT
 3780 MOUSE a%,b%,c%
 3790 IF TIME>30 AND (TIME MOD10)<2 THEN
 length%+=d%:IF TIME>150 d%+=SGN(d%)
 3800 IF length%<10 THEN length%=10
 3810 IF length%>maxlength%/256 THEN len
gth%=maxlength%/256
 3820 a$=STR$length%:a$=STRING$(4-LENa$,
CHR$32)+a$
 3830 WAIT:PRINTTAB(48,22);a$;
 3840 UNTIL a%<n% OR a%>=n%+56 OR b%<p%
OR b%>=p%+56 OR c%=0
 3850 !samplelen=length%*256
 3860 recalc%=TRUE
 3870 ENDPROC
 3880 :
 3890 DEF PROCerror
 3900 IF ERR=17 THEN
 3910 SYS "OS_Byte",138,0,13
 3920 ELSE
 3930 PRINT'REPORT$;" (Error &";~ERR;")"
 3940 ENDIF
 3950 ENDPROC
 3960 :
 3970 DEF PROCloadsample
 3980 LOCAL ERROR
 3990 PROCsmallwindow
 4000 ON ERROR LOCAL PROCerror
 4010 REPEAT
 4020 INPUT"Enter filename: "a$
 4030 l%=0:a%=1
 4040 IF a$<>"" THEN SYS "OS_File",5,a$
TO a%,,,,l%
 4050 IF a%<>1 THEN PRINT'"File '";a$;"'
 not found"
 4060 IF a%=1 AND l%>=maxlength% THEN PR
INT"Sample is too large - alter maxlengt
h% variable at start of program"
 4070 UNTIL a$="" OR (a%=1 AND l%<maxlen
gth%)
 4080 IF !slot=0 THEN CALL setupsound
 4090 IF !playflag THEN VOICESvoices%
 4100 IF a$<>"" THEN
 4110 SYS "OS_File",255,a$,buffer%,0
 4120 a%=(l%+255) AND (NOT255)
 4130 !samplelen=a%:!playflag=TRUE:recal
c%=FALSE
 4140 IF a%>l% THEN FOR T%=l% TO a%-1:bu
ffer%?T%=0:NEXT
 4150 foreign%=TRUE:VOICES voices%:n%()=
0:c%()=0
 4160 MOUSE RECTANGLE 0,104,479,111
 4170 SYS "Sound_Configure",0,,?buffer%
 4180 ENDIF
 4190 PROCfullwindow
 4200 ENDPROC
 4210 :
 4220 DEF PROCsavesample
 4230 LOCAL ERROR
 4240 PROCsmallwindow
 4250 X%=0
 4260 ON ERROR LOCAL PROCerror:IF X%<>0
THEN A%=X%:X%=0:CLOSE#A%
 4270 ok%=FALSE
 4280 REPEAT
 4290 INPUT "Enter filename: "f$
 4300 IF f$<>"" THEN
 4310 X%=OPENOUTf$
 4320 IF X%=0 THEN
 4330 PRINT'"Unable to open file"
 4340 ELSE
 4350 IF recalc% THEN CALLcalcsample:rec
alc%=FALSE
 4360 BPUT #X%,48
 4370 SYS "OS_GBPB",2,X%,buffer%,length%
*256
 4380 CLOSE#X%:X%=0
 4390 SYS "OS_File",18,f$,&D3C
 4400 ok%=TRUE
 4410 ENDIF
 4420 ENDIF
 4430 UNTIL ok% OR f$=""
 4440 PROCfullwindow
 4450 ENDPROC
 4460 :
 4470 DEF PROCsavedata
 4480 LOCAL ERROR
 4490 PROCsmallwindow
 4500 FOR a%=&1A0 TO &29C STEP 4:file%!a
%=file%!a% EOR &80808080:NEXT
 4510 ON ERROR LOCAL PROCerror
 4520 INPUT "Enter filename: "f$
 4530 IF f$<>"" THEN
 4540 a$=f$
 4550 WHILE INSTR(a$,":")>0:a$=MID$(a$,I
NSTR(a$,":")+1):ENDWHILE
 4560 WHILE INSTR(a$,".")>0:a$=MID$(a$,I
NSTR(a$,".")+1):ENDWHILE
 4570 a%=16+2^source%
 4580 $file%=LEFT$(a$,31)
 4590 file%!&48=256
 4600 file%!&4C=256+(a%<<24)
 4610 file%!&50=&2FF
 4620 file%!&54=256
 4630 file%!&58=256
 4640 file%!&5C=length%<<8
 4650 FOR a%=file%+&20 TO file%+&29:a%?1
0=?a%:a%?20=?a%:a%?30=?a%:NEXT
```

```
4660 SYS "OS_File",10,f$,filetype%,,fil
e%,file%+&7A0
4670 ENDIF
4680 FOR a%=&1A0 TO &29C STEP 4:file%!a
%=file%!a% EOR &80808080:NEXT
4690 PROCfullwindow
4700 ENDPROC
4710 :
4720 DEF PROCloaddata
4730 LOCAL ERROR
4740 PROCsmallwindow
4750 ON ERROR LOCAL PROCerror
4760 REPEAT
4770 INPUT"Enter filename: "a$
4780 l%=&7A0:a%=1
4790 IF a$<>"" THEN SYS "OS_File",5,a$
TO a%,,,,l%
4800 IF a%<>1 THEN PRINT'"File '";a$;"'
not found"
4810 IF a%=1 AND l%<>&7A0 THEN PRINT"Th
is is not a HarmSynth file"
4820 UNTIL a$="" OR (a%=1 AND l%=&7A0)
4830 IF a$<>"" THEN
4840 SYS "OS_File",255,a$,file%,0
4850 FOR a%=&1A0 TO &29C STEP 4:file%!a
%=file%!a% EOR &80808080:NEXT
4860 source%=0
4870 a%=file%?&4F:IF (a% AND16) THEN
4880 FOR b%=3 TO 0 STEP -1:IF a% AND (2
^b%) THEN source%=b%
4890 NEXT
4900 ENDIF
4910 length%=(file%!&5C) >>>8
4920 IF length%=0 THEN length%=200
4930 PROCnewfile
4940 ENDIF
4950 PROCfullwindow
4960 ENDPROC
4970 :
4980 DEF PROCinitcode
4990 DIM code% 7164
5000 FOR T%=code% TO code%+7160 STEP 4
5010 !T%=0:NEXT
5020 FOR PASS=0 TO 2 STEP 2
5030 P%=code%
5040 [OPT PASS
5050 :
5060 .playflag EQUD 0
5070 .keylist FNr(32)
5080 .keytable FNr(128)
5090 :
5100 .event
5110 CMP R0,#11
5120 MOVNES PC,R14
5130 LDR R0,playflag
5140 TEQ R0,#0
5150 BEQ eventout
5160 ADR R0,keytable
5170 LDRB R0,[R0,R2]
5180 TEQ R0,#255
5190 BEQ eventout
5200 STMFD R13!,{R1,R2}
5210 ADD R1,R1,#1
5220 ADR R2,keylist
5230 STRB R1,[R2,R0]
5240 LDMFD R13!,{R1,R2}
5250 .eventout
5260 MOV R0,#11
5270 MOVS PC,R14
5280 :
5290 .voice
5300 \ sample must be a multiple of 256
5310 \ bytes long - add zeros to the en
d
5320 \ to make up the length!
5330 B fill
5340 B update
5350 B gateon
5360 B gateoff
5370 B instantiate
5380 LDMFD R13!,{PC}
5390 LDMFD R13!,{PC}
5400 EQUD voicename-voice
5410 .voicename
5420 EQUS "TestVoice2"
5430 EQUB 0:ALIGN
5440 :
5450 .instantiate
5460 STMFD R13!,{R0-R4}
5470 MOV R0,#0
5480 MOV R1,#0
5490 MOV R2,#0
5500 MOV R3,#0
5510 MOV R4,#0
5520 SWI "XSound_Configure"
5530 LDRVC R0,[R3,#8]
5540 STRVC R0,logptr
5550 STRVS R0,[R13]
5560 LDMFD R13!,{R0-R4,PC}
5570 :
5580 .gateon
5590 ADR R0,sampleptr
5600 LDMIA R0,{R0-R2}
5610 ADD R3,R9,#16
5620 STMIA R3,{R0-R2}
5630 .update
5640 LDR R0,[R9,#4]
5650 MOV R0,R0,LSL #16
5660 MOV R0,R0,LSR #18
5670 STR R0,[R9,#4]
5680 :
5690 .fill
5700 LDMIA R9,{R0-R6}
5710 AND R0,R0,#127
5720 RSB R0,R0,#127
5730 :
5740 .fillloop
5750 ]:FOR T%=0 TO 3:[OPT PASS
5760 ADDS R1,R1,R1,LSL #16
5770 ADRCS R7,P%+8
5780 BCS nextwave
5790 LDRB R7,[R4,R1,LSR #24]
5800 LDRB R7,[R6,R7,LSL #5]
5810 SUBS R7,R7,R0,LSL #1
5820 MOVMI R7,#0
5830 STRB R7,[R12],R11
5840 ]:NEXT:[OPT PASS
5850 CMP R12,R10
5860 BLT fillloop
5870 STMIB R9,{R1-R5}
5880 MOV R0,#8
5890 LDMFD R13!,{PC}
5900 :
5910 .nextwave
5920 ADD R4,R4,#256
5930 SUBS R5,R5,#256
5940 MOVGT PC,R7
5950 LDR R5,alternative
5960 TEQ R5,#0
5970 BEQ nolooping
5980 LDR R4,sampleptr
5990 LDR R5,samplelen
6000 MOV PC,R7
6010 .nolooping
6020 MOV R7,#0
6030 .blankloop
6040 STRB R7,[R12],R11
6050 CMP R12,R10
6060 BLT blankloop
6070 STMIB R9,{R1-R5}
6080 MOV R0,#2
6090 LDMFD R13!,{PC}
6100 :
6110 .gateoff
6120 MOV R0,#0
6130 .gateoffloop
6140 STRB R0,[R12],R11
6150 STRB R0,[R12],R11
6160 STRB R0,[R12],R11
6170 STRB R0,[R12],R11
6180 CMP R12,R10
6190 BLT gateoffloop
6200 MOV R0,#1
6210 LDMFD R13!,{PC}
6220 :
6230 .errorhandler
6240 STMFD R13!,{R0-R4,R14}
6250 BL restore
6260 LDMFD R13!,{R0-R4,R14}
6270 SWI "OS_GenerateError"
6280 SWI "OS_Exit"
6290 .exithandler
6300 STMFD R13!,{R0-R4,R14}
6310 BL restore
6320 LDMFD R13!,{R0-R4,R14}
6330 SWI "OS_Exit"
6340 .upcall
6350 TEQ R0,#256
6360 MOVNES PC,R14
6370 STMFD R13!,{R0-R4,R12,R14}
6380 BL restore
6390 ADR R0,envpars+24
6400 LDMIA R0,{R1,R12}
6410 LDR R0,[R13]
6420 LDR R2,[R13,#8]
6430 ADR R14,P%+8
6440 MOV PC,R1
6450 STR R0,[R13]
6460 LDMFD R13!,{R0-R4,R12,R14}
6470 MOVS PC,R14
6480 :
6490 .restore
6500 STMFD R13!,{R14}
6510 ADR R4,envpars
6520 MOV R0,#6
6530 LDMIA R4!,{R1-R3}
6540 SWI "XOS_ChangeEnvironment"
6550 MOV R0,#11
6560 LDMIA R4!,{R1-R3}
6570 SWI "XOS_ChangeEnvironment"
6580 MOV R0,#16
6590 LDMIA R4!,{R1-R3}
6600 SWI "XOS_ChangeEnvironment"
6610 ADR R0,config
6620 LDMIA R0,{R0,R2}
6630 MOV R1,#0
6640 MOV R3,#0
6650 MOV R4,#0
6660 SWI "XSound_Configure"
6670 LDR R1,slot
6680 SWI "XSound_RemoveVoice"
6690 MOV R0,#0
6700 STR R0,slot
6710 MOV R0,#1
6720 LDR R1,oldslot
6730 SWI "XSound_AttachVoice"
6740 MOV R0,#13
6750 MOV R1,#11
6760 SWI "XOS_Byte"
6770 MOV R0,#&10
6780 ADR R1,event
6790 MOV R2,#0
6800 SWI "XOS_Release"
6810 LDMFD R13!,{PC}
6820 :
6830 .envpars FNr(36)
6840 .config FNr(8)
6850 .slot EQUD 0
6860 .oldslot EQUD 0
6870 :
6880 .setupsound
6890 MOV R0,#1
6900 MOV R1,#0
6910 MOV R2,#48
6920 MOV R3,#0
6930 MOV R4,#0
6940 SWI "XSound_Configure"
6950 ADR R1,config
6960 STMIA R1,{R0,R2}
6970 ADR R0,voice
6980 MOV R1,#0
6990 SWI "XSound_InstallVoice"
7000 BVS sounderror
7010 TEQ R1,#0
7020 BEQ sounderror
7030 STR R1,slot
7040 MOV R0,#1
7050 SWI "XSound_AttachVoice"
7060 STR R1,oldslot
7070 ADR R4,envpars
7080 MOV R5,#0
7090 MOV R6,#0
7100 MOV R7,#0
7110 MOV R0,#6
7120 ADR R1,errorhandler
7130 ADR R3,harmonictemp
7140 ADD R2,R3,#4
7150 SWI "XOS_ChangeEnvironment"
7160 STMVSIA R4!,{R5-R7}
7170 STMVCIA R4!,{R1-R3}
7180 MOV R0,#11
7190 ADR R1,exithandler
7200 MOV R2,#0
7210 MOV R3,#0
7220 SWI "XOS_ChangeEnvironment"
7230 STMVSIA R4!,{R5-R7}
7240 STMVCIA R4!,{R1-R3}
7250 MOV R0,#16
7260 ADR R1,upcall
7270 MOV R2,#0
7280 MOV R3,#0
7290 SWI "XOS_ChangeEnvironment"
7300 STMVSIA R4!,{R5-R7}
7310 STMVCIA R4!,{R1-R3}
7320 MOV R0,#&10
7330 ADR R1,event
7340 MOV R2,#0
7350 SWI "XOS_Claim"
7360 MOV R0,#14
7370 MOV R1,#11
7380 SWI "XOS_Byte"
7390 MOV PC,R14
7400 :
7410 .sounderror
7420 ADR R0,error
7430 SWI "OS_GenerateError"
7440 MOV PC,R14
7450 .error
7460 EQUD 0
7470 EQUS "Unable to install voice gene
rator"
7480 EQUB 0:ALIGN
7490 :
7500 .sampleptr EQUD 0
7510 .samplelen EQUD 256
7520 .logptr EQUD 0
7530 :
7540 .redraw
7550 \ r0 = file offset
7560 \ r1 = xco
7570 \ r2 = yco
7580 \ r4 = step
7590 \ r5 = 128 for signed or 256 for u
nsigned
7600 MOV R10,R5
7610 LDR R7,fileptr
7620 ADD R5,R7,R0
7630 MOV R6,R2
7640 MOV R0,#4
7650 MOV R8,#256
7660 .redrawloop
7670 LDRB R7,[R5],R4
7680 TST R7,R10
7690 RSBNE R7,R7,#256
7700 ADDEQ R2,R6,R7
7710 SUBNE R2,R6,R7
7720 SWI "OS_Plot"
7730 ADD R1,R1,#2
7740 MOV R0,#5
7750 SUBS R8,R8,#1
7760 BNE redrawloop
7770 MOV PC,R14
7780 :
7790 .calcharmonics
7800 MOV R0,#0
7810 ADR R1,harmonictemp
7820 MOV R2,#1024
7830 .wipebuffer
7840 STR R0,[R1],#4
7850 SUBS R2,R2,#4
7860 BNE wipebuffer
7870 LDR R0,sourcewaveptr
7880 LDR R1,fileptr
7890 ADD R1,R1,#32
7900 MOV R2,#10
7910 MOV R5,#1<<24
7920 .harmonicloop
7930 LDRB R3,[R1],#1
7940 MOV R4,#0
7950 MOV R8,#256
7960 ADR R7,harmonictemp
7970 .waveloop
7980 LDRB R6,[R0,R4,LSR #24]
7990 TST R6,#128
8000 RSBNE R6,R6,#256
8010 MUL R6,R3,R6
8020 MOV R6,R6,LSR #7
8030 RSBNE R6,R6,#0
8040 LDR R9,[R7]
8050 ADD R9,R9,R6
8060 STR R9,[R7],#4
8070 ADD R4,R4,R5
8080 SUBS R8,R8,#1
8090 BNE waveloop
8100 ADD R5,R5,#1<<24
8110 SUBS R2,R2,#1
8120 BNE harmonicloop
8130 MOV R0,#256
8140 ADR R1,harmonictemp
8150 MOV R2,#0
8160 .getvolume
8170 LDR R3,[R1],#4
8180 CMP R3,#0
8190 RSBLT R3,R3,#0
8200 CMP R3,R2
8210 MOVGT R2,R3
8220 SUBS R0,R0,#1
8230 BNE getvolume
8240 SUBS R2,R2,#128
8250 MOVLT R2,#&10000
8260 BLT dontlookup
8270 LDR R0,scaleptr
8280 ADD R0,R0,R2,LSL #1
8290 LDRB R1,[R0]
8300 LDRB R2,[R0,#1]
8310 ORR R2,R1,R2,LSL #8
8320 .dontlookup
8330 ADR R0,harmonictemp
8340 LDR R1,fileptr
8350 ADD R1,R1,#&2A0
8360 MOV R4,#256
8370 .scaleharmonics
8380 LDR R3,[R0],#4
8390 CMP R3,#0
8400 RSBLT R3,R3,#0
8410 MUL R3,R2,R3
8420 MOV R3,R3,LSR #16
8430 RSBLT R3,R3,#0
8440 AND R3,R3,#255
8450 ORR R3,R3,R3,LSL #8
8460 ORR R3,R3,R3,LSL #16
8470 STR R3,[R1],#4
8480 SUBS R4,R4,#1
8490 BNE scaleharmonics
8500 MOV PC,R14
8510 :
8520 .calcsample
8530 LDR R0,sampleptr
8540 LDR R1,samplelen
8550 LDR R2,fileptr
8560 ADD R4,R2,#&2A0
8570 LDR R5,alternative
8580 TEQ R5,#0
8590 MOVNE R2,R5
8600 ADDNE R3,R5,#&100
8610 ADDEQ R3,R2,#&1A0
8620 ADDEQ R2,R2,#&A0
8630 MOV R5,R1,LSR #8
8640 MOV R10,#0
8650 LDR R11,pitchtableptr
8660 .calcsampleloop1
8670 MOV R6,R5
8680 LDRB R7,[R2],#1
8690 LDRB R8,[R3],#1
8700 LDR R9,[R11,R8,LSL #2]
8710 .calcsampleloop2
8720 LDRB R12,[R4,R10,LSR #22]
8730 ADD R10,R10,R9
8740 TST R12,#128
8750 RSBNE R12,R12,#256
8760 MUL R12,R7,R12
8770 MOV R12,R12,LSR #7
8780 RSBNE R12,R12,#256
8790 STRB R12,[R0],#1
8800 SUBS R6,R6,#1
8810 BGT calcsampleloop2
8820 SUBS R1,R1,R5
8830 BGT calcsampleloop1
8840 MOV PC,R14
8850 :
8860 .alternative EQUD 0
8870 .scaleptr EQUD 0
8880 .sourcewaveptr EQUD 0
8890 .fileptr EQUD 0
8900 .pitchtableptr EQUD 0
8910 .harmonictemp FNr(1024)
8920 :
8930 .pitchtable FNr(1024)
8940 .scalelookup FNr(10*128*2+2-128*2)
8950 .sine FNr(256)
8960 .triangle FNr(256)
8970 .sawtooth FNr(256)
8980 .square FNr(256)
8990 :
9000 ]NEXT
9010 FOR T%=128 TO 10*128
9020 scalelookup!((T%-128)*2)=127/T%*&1
0000
9030 NEXT
9040 a%=0:b%=2
9050 FOR T%=0 TO 255
9060 sine?T%=127*SIN(T%/256*2*PI)
9070 IF a%=128 THEN triangle?T%=127 ELS
E triangle?T%=a%
9080 a%+=b%:IF a%>=128 OR a%<=-127 THEN
 b%=-b%
9090 IFT%<128 THEN square?T%=127 ELSE s
quare?T%=128
9100 sawtooth?T%=T%
9110 NEXT
9120 PROCpitchrange
9130 RESTORE +0:B%=0
9140 FOR T%=0 TO 127:keytable?T%=255:NE
XT
9150 REPEAT
9160 READ A%
9170 IF A%<>0 THEN keytable?A%=B%:B%+=1
9180 UNTIL A%=0
9190 SYS "OS_CRC",0,code%,P%,1 TO crc%
9200 IF crc%<>&63AA THEN PRINT"Checksum
 wrong - check the listing from 'DEF PRO
Cinitcode' to 'ENDPROC'":END
9210 !sampleptr=buffer%
9220 !samplelen=maxlength%
9230 !scaleptr=scalelookup
9240 !sourcewaveptr=sine
```

```
9250 !fileptr=file%
9260 !pitchtableptr=pitchtable
9270 FOR T%=2 TO 8:SYS "Sound_AttachVoi
ce",T%,0 TO ,voice%(T%):NEXT
9280 CALL setupsound
9290 FOR T%=1 TO 8:VOICE T%,"TestVoice2
":NEXT
9300 ENDPROC
9310 :
9320 DATA &4E,&3D,&4F,&3E,&50,&51,&40,&
52,&41,&53,&42,&54
9330 DATA &27,&12,&28,&13,&29,&2A,&15,&
2B,&16,&2C,&17,&2D
9340 DATA &2E,&19,&2F,&1A,&30
9350 DATA 0
9360 :
9370 DEF FNr(i%):P%+=i%:=""
```

*INFO

Listing 1 - WetSrc

```
10 REM >WetSrc (Info1)
20 REM By Richard T-W and Matthew G
30 REM For eight-bit machines
40 REM (c) BBC Acorn User July 1992
50 :
60 MODE 7
70 PRINT "Assembling code...";
80 PROCassemble
90 PROCsave
100 END
110 :
120 DEF PROCassemble
130 x%      = &2400
140 y%      = &2500
150 onscr%  = &2600
160 col%    = &2700
170 upflag% = &2800
180 xtablo% = &2900
190 xtabhi% = &2980
200 ytablo% = &2A00
210 ytabhi% = &2B00
220 rndtab% = &2C00
230 code%   = &2D00
240 :
250 FOR N%=0 TO 127
260 A%=(N% AND 254)*4
270 xtablo%?N% = A% MOD 256
280 xtabhi%?N% = A% DIV 256
290 NEXT
300 :
310 FOR N%=0 TO 255
320 A%=&3040+(N% DIV 8)*640+(N% AND 7)
330 ytablo%?N% = A% MOD 256
340 ytabhi%?N% = A% DIV 256
350 NEXT
360 :
370 FOR N%=0 TO &FF STEP 4
380 rndtab%!N% = RND
390 NEXT
400 :
410 px=&70
420 py=&71
430 read=&72
440 write=&74
450 colour=&76
460 rndptr=&77
470 tempx=&78
480 north=&79
490 south=&7A
500 east=&7B
510 west=&7C
520 dotmade=&7D
530 ox=&7E
540 oy=&7F
550 tapx=&80
560 tapwidth=&81
570 valvex=&82
580 valvey=&86
590 valveflag=&8A
600 keyflag=&8E
610 osbyte=&FFF4
620 escflag=&FF
630 :
640 FOR N%=0 TO 2 STEP 2
650 P%=code%
660 [OPT N%
670 JMP setup
680 JMP start
690 JMP dotremove
700 JMP showvalve
710 :
720 .rnd
730 LDY rndptr
740 LDA rndtab%,Y
750 EOR &FE44
760 STA rndtab%,Y
770 INC rndptr
780 RTS
790 :
800 .addr
810 LDX px
820 LDY py
830 CLC
840 LDA xtablo%,X
850 ADC ytablo%,Y
860 STA write
870 LDA xtabhi%,X
880 ADC ytabhi%,Y
890 STA write+1
900 LDA px
910 AND #1
920 RTS
930 :
940 .plot
950 STX tempx
960 JSR addr
970 BNE rightpix
980 .leftpix
990 LDX colour
1000 LDY #0
1010 LDA (write),Y
1020 AND #&55
1030 ORA cols1,X
1040 STA (write),Y
1050 LDX tempx
1060 RTS
1070 .rightpix
1080 LDX colour
1090 LDY #0
1100 LDA (write),Y
1110 AND #&AA
1120 ORA cols2,X
1130 STA (write),Y
1140 LDX tempx
1150 RTS
1160 :
1170 .unplot
1180 STX tempx
1190 JSR addr
1200 BNE rightpix2
1210 .leftpix2
1220 LDY #0
1230 LDA (write),Y
1240 AND #&55
1250 STA (write),Y
1260 LDX tempx
1270 RTS
1280 .rightpix2
1290 LDY #0
1300 LDA (write),Y
1310 AND #&AA
1320 STA (write),Y
1330 LDX tempx
1340 RTS
1350 :
1360 .point
1370 STX tempx
1380 JSR addr
1390 BNE rightpix3
1400 .leftpix3
1410 LDX tempx
1420 LDY #0
1430 LDA (write),Y
1440 AND #&AA
1450 RTS
1460 .rightpix3
1470 LDX tempx
1480 LDY #0
1490 LDA (write),Y
1500 AND #&55
1510 RTS
1520 :
1530 .cols1
1540 EQUD &A080200
1550 EQUD &2A282220
1560 .cols2
1570 EQUD &5040100
1580 EQUD &15141110
1590 :
1600 .setup
1610 LDX #0
1620 .resetloop
1630 LDA #0
1640 STA onscr%,X
1650 STA upflag%,X
1660 JSR rnd
1670 AND #1
1680 ASL A
1690 CLC
1700 ADC #4
1710 STA col%,X
1720 INX
1730 BNE resetloop
1740 RTS
1750 :
1760 .start
1770 LDA #0
1780 STA dotmade
1790 LDX #0
1800 .foreach
1810 LDA onscr%,X
1820 BNE olddot
1830 JMP newdot
1840 .olddot
1850 LDY x%,X
1860 STY ox
1870 INY
1880 STY px
1890 LDA y%,X
1900 STA oy
1910 STA py
1920 JSR point
1930 STA east
1940 DEC px
1950 DEC px
1960 JSR point
1970 STA west
1980 INC px
1990 DEC py
2000 JSR point
2010 STA north
2020 INC py
2030 INC py
2040 JSR point
2050 STA south
2060 BNE nfall
2070 JMP fall
2080 .nfall
2090 AND #&C0
2100 BEQ notdivide
2110 JMP divide
2120 .notdivide
2130 LDA east
2140 ORA west
2150 BNE notrand
2160 JMP randlr
2170 .notrand
2180 LDA east
2190 BNE noteast
2200 JMP moveast
2210 .noteast
2220 LDA west
2230 BNE notwest
2240 JMP movewest
2250 .notwest
2260 LDA north
2270 BNE nextdot
2280 DEC y%,X
2290 LDA #&FF
2300 STA upflag%,X
2310 .nextdot
2320 LDA ox
2330 STA px
2340 LDA oy
2350 STA py
2360 JSR unplot
2370 LDA x%,X
2380 STA px
2390 LDA y%,X
2400 STA py
2410 LDA col%,X
2420 STA colour
2430 JSR plot
2440 .pastdot
2450 INX
2460 BEQ notfor
2470 JMP foreach
2480 .notfor
2490 JSR keycheck
2500 BIT escflag
2510 BMI end
2520 JMP start
2530 .end
2540 RTS
2550 :
2560 .newdot
2570 ORA dotmade
2580 BNE pastdot
2590 LDA #&FF
2600 STA dotmade
2610 STA onscr%,X
2620 JSR rnd
2630 AND tapwidth
2640 CLC
2650 ADC tapx
2660 STA x%,X
2670 STA ox
2680 LDA #0
2690 STA y%,X
2700 STA oy
2710 BNE nextdot
2720 :
2730 .fall
2740 LDA upflag%,X
2750 BNE clear
2760 INC y%,X
2770 BNE nextdot
2780 .clear
2790 LDA east
2800 BEQ clear2
2810 LDA west
2820 BEQ clear2
2830 LDA north
2840 BNE nextdot
2850 DEC y%,X
2860 BNE nextdot
2870 .clear2
2880 LDA #0
2890 STA upflag%,X
2900 BEQ nextdot
2910 :
2920 .randlr
2930 JSR rnd
2940 BPL movewest
2950 :
2960 .moveast
2970 INC x%,X
2980 JMP nextdot
2990 :
3000 .movewest
3010 DEC x%,X
3020 JMP nextdot
3030 :
3040 .divide
3050 LDA col%,X
3060 CMP #4
3070 BEQ moveast
3080 BNE movewest
3090 :
3100 .dotremove
3110 LDX #0
3120 .dotlp
3130 LDA onscr%,X
3140 BEQ nodel
3150 LDA x%,X
3160 STA px
3170 LDA y%,X
3180 STA py
3190 JSR unplot
3200 .nodel
3210 INX
3220 BNE dotlp
3230 RTS
3240 :
3250 .valve
3260 EQUD &202173F:EQUD &3030202
3270 EQUD &3F3F:EQUD &3030000
3280 EQUD &33333F3F:EQUD &3033333
3290 EQUD &37373F3F:EQUD &3173737
3300 :
3310 .showvalve
3320 LDA valvex,X
3330 STA px
3340 LDA valvey,X
3350 STA py
3360 TXA
3370 PHA
3380 JSR addr
3390 PLA
3400 TAX
3410 LDA valveflag,X
3420 BMI ignore
3430 BEQ print
3440 LDY #31
3450 LDA #0
3460 .delvalve1
3470 STA (write),Y
3480 DEY
3490 BPL delvalve1
3500 LDA #0
3510 STA valveflag,X
3520 .ignore
3530 RTS
3540 .print
3550 LDY #31
3560 .print2
3570 LDA valve,Y
3580 STA (write),Y
3590 DEY
3600 BPL print2
3610 LDA valvecol,X
3620 STA colour
3630 CLC
3640 LDA valvex,X
3650 ADC #2
3660 STA px
3670 CLC
3680 LDA valvey,X
3690 ADC #3
3700 STA py
3710 TXA
3720 PHA
3730 JSR plot
3740 INC py
3750 JSR plot
3760 PLA
3770 TAX
3780 LDA #1
3790 STA valveflag,X
3800 RTS
3810 :
3820 .valvecol
3830 EQUD &07060302
3840 .keytab
3850 EQUB 32  \f0
3860 EQUB 113 \f1
3870 EQUB 114 \f2
3880 EQUB 115 \f3
3890 :
3900 .keycheck
3910 LDA #&79
3920 LDX #32
3930 JSR osbyte
3940 TXA
3950 BPL keypress
3960 LDA #0
3970 STA keyflag
3980 .keypress
3990 LDX #3
4000 .testkeys
4010 CMP keytab,X
4020 BNE notpressed
4030 PHA
4040 LDA keyflag
4050 BNE lastpress
4060 JSR showvalve
4070 LDA #&FF
4080 STA keyflag
4090 .lastpress
4100 PLA
4110 .notpressed
4120 DEX
4130 BPL testkeys
4140 RTS
4150 ]
4160 NEXT
4170 ENDPROC
4180 :
4190 DEF PROCsave
4200 PRINT ''"Code assembled."
4210 PRINT ''"Saving :"
4220 osc$="SAVE WaterMC "+STR$~xtablo%+
" "+STR$~P%
4230 PRINT'"*";osc$
4240 OSCLI (osc$)
4250 ENDPROC
```

Listing 2 – WaterEd

```
10 REM >WaterEd (Info2)
20 REM By Richard T-W and Matthew G
30 REM For eight-bit machines
40 REM (c) BBC Acorn User July 1992
50 :
60 IF PAGE>&1100:PAGE=&1100:CHAIN "Wa
terEd"
70 MODE 2
```

```
   80 HIMEM=&2400
   90 VDU 23;8202;0;0;0;19,15,2;0;
  100 PROCinit
  110 CALL setup
  120 PROCscreen
  130 ON ERROR PROCerror
  140 REPEAT
  150 *FX 229,1
  160 PROCdesign
  170 *FX 229,0
  180 CALL start
  190 UNTIL FALSE
  200 END
  210 :
  220 DEF PROCinit
  230 OSCLI "Load WaterMC 2900"
  240 setup=&2D00
  250 start=&2D03
  260 remove=&2D06
  270 showvalve=&2D09
  280 tapx=&80
  290 width=&81
  300 valvex=&82
  310 valvey=&86
  320 valveflag=&8A
  330 ?tapx=63
  340 ?width=0
  350 !valveflag=-1
  360 ENDPROC
  370 :
  380 DEF PROCscreen
  390 VDU 29,128;0;
  400 GCOL 0,7
  410 MOVE 0,0
  420 DRAW 0,1023
  430 DRAW 1023,1023
  440 DRAW 1023,0
  450 DRAW 0,0
  460 GCOL 0,0
  470 MOVE ?tapx*8,1023
  480 PLOT 1,?width*8,0
  490 MOVE ?tapx*8,0
  500 PLOT 1,?width*8,0
  510 :
  520 title$="WATERWORLD"
  530 FOR loop%=1 TO LEN(title$)
  540 COLOUR loop% MOD 7+1
  550 PRINT TAB(0,loop%*2+3);MID$(title$
,loop%,1)
  560 PRINT TAB(19,loop%*2+3);MID$(title
$,loop%,1)
  570 NEXT
  580 ENDPROC
  590 :
  600 DEF PROCerror
  610 IF ERR=17 AND NOT INKEY-1 ENDPROC
  620 *FX 229,0
  630 *FX 15
  640 VDU 22,7
  650 REPORT
  660 PRINT " at line ";ERL
  670 END
  680 :
  690 DEF PROCcol
  700 COLOUR 128+col%
  710 FOR N%=0 TO 19 STEP 19
  720 PRINT TAB(N%,29)" "TAB(N%,30)" ";
  730 NEXT
  740 COLOUR 128
  750 ENDPROC
  760 :
  770 DEF PROCmove
  780 speed%=4-12*INKEY-1
  790 curx%=curx%+INKEY-98*speed%-INKEY-
67*speed%
  800 cury%=cury%+INKEY-105*speed%-INKEY
-73*speed%
  810 IF curx%<8 curx%=8
  820 IF curx%>1015 curx%=1015
  830 IF cury%<4 cury%=4
  840 IF cury%>1019 cury%=1019
  850 IF INKEY-49 col%=7:PROCcol
  860 IF INKEY-50 col%=15:PROCcol
  870 IF INKEY-113 AND INKEY-1 PROCerror
  880 ENDPROC
  890 :
  900 DEF PROCdesign
  910 GCOL 3,7
  920 curx%=512
  930 cury%=512
  940 col%=7
  950 PROCcol
  960 PLOT 69,curx%,cury%
  970 REPEAT
  980 ox%=curx%
  990 oy%=cury%
 1000 PROCmove
 1010 PLOT 69,ox%,oy%
 1020 IF INKEY-87 PROClines
 1030 IF INKEY-74 GCOL 0,col%:PLOT 69,cu
rx%,cury%:GCOL 3,7
 1040 IF INKEY-90 GCOL 0,0:PLOT 69,curx%
,cury%:GCOL 3,7
 1050 IF INKEY-33 PROCvalve(0)
 1060 IF INKEY-114 PROCvalve(1)
 1070 IF INKEY-115 PROCvalve(2)
 1080 IF INKEY-116 PROCvalve(3)
 1090 PLOT 69,curx%,cury%
 1100 UNTIL INKEY-97
 1110 PLOT 69,curx%,cury%
 1120 ENDPROC
 1130 :
 1140 DEF PROClines
 1150 REPEAT UNTIL NOT INKEY-87
 1160 sx%=curx%
 1170 sy%=cury%
 1180 GCOL 3,7
 1190 MOVE sx%,sy%:DRAW curx%,cury%
 1200 REPEAT
 1210 ox%=curx%
 1220 oy%=cury%
 1230 PROCmove
 1240 MOVE sx%,sy%:DRAW ox%,oy%
 1250 MOVE sx%,sy%:DRAW curx%,cury%
 1260 UNTIL INKEY-87
 1270 GCOL 0,col%
 1280 MOVE sx%,sy%:DRAW curx%,cury%
 1290 GCOL 3,7
 1300 REPEAT UNTIL NOT INKEY-87
 1310 ENDPROC
 1320 :
 1330 DEF PROCvalve(num%)
 1340 IF curx%<16 OR curx%>943 OR cury%>
991 OR cury%<32 ENDPROC
 1350 LOCAL X%
 1360 X%=num%
 1370 IF INKEY-1 PROCunvalve(num%):ENDPR
OC
 1380 IF valveflag?num%=255 valveflag?nu
m%=0
 1390 IF valveflag?num%=1 CALL showvalve
 1400 valvex?num%=(curx% DIV 8) AND &FE
 1410 valvey?num%=((1023-cury%) DIV 4) A
ND &F8
 1420 CALL showvalve
 1430 ENDPROC
 1440 :
 1450 DEF PROCunvalve(num%)
 1460 IF valveflag?num%=255 ENDPROC
 1470 IF valveflag?num%=1 CALL showvalve
 1480 valveflag?num%=255
 1490 ENDPROC
```

Listing 3 – IntDemo

```
   10 REM >IntDemo (Info3)
   20 REM By DAvid Acton
   30 REM 32-bit only
   40 REM (c) BBC Acorn User July 1992
   50 :
   60 MODE 12
   70 OFF
   80 PROCass
   90 PROCdemo_screen
  100 PROCrand_colours
  110 CALL calibrate
  120 !each=8*!total/312.5
  130 CALL doit
  140 END
  150 :
  160 DEF PROCass
  170 DIM code% &4000
  180 device_vsync=3
  190 device_timer1=6
  200 IOC=&03200000
  210 VIDC=&03400000
  220 IOCIRQSTAA=&10
  230 IOCIRQREQA=&14
  240 IOCIRQCLRA=&14
  250 IOCIRQMSKA=&18
  260 IOCIRQMSKB=&28
  270 Timer1LL=&50
  280 Timer1LH=&54
  290 Timer1GO=&58
  300 Timer1CL=&50
  310 Timer1CH=&54
  320 Timer1LR=&5C
  330 EventV=&10
  340 timer1_bit=6
  350 vsync_bit=3
  360 sp=13:link=14:pc=15
  370 FOR pass%=0 TO 2 STEP 2
  380 P%=code%
  390 WHILE P% MOD 16>0
  400  P%+=4
  410 ENDWHILE
  420 [OPT pass%
  430 .event_vsync
  440          STMFD   (sp)!,{r0-r12,link
}
  450          CMP     r0,#4
  460          LDMNEFD (sp)!,{r0-r12,pc}^
  470          MOV     r14,#IOC
  480          STRB    r0,[r14,#Timer1LR]
  490          LDRB    r1,[r14,#Timer1CL]
  500          LDRB    r2,[r14,#Timer1CH]
  510          ADD     r1,r1,r2,LSL #8
  520          RSB     r1,r1,#&10000
  530          STR     r1,time
  540          MVN     r0,#0
  550          BL      set_timer
  560          LDR     r0,frame
  570          ADD     r0,r0,#1
  580          STR     r0,frame
  590          LDMFD   (sp)!,{r0-r12,pc}^
  600
  610 .event_start
  620          STMFD   (sp)!,{r0-r2,link}
  630          MOV     r1,#IOC
  640          MOV     r0,#1<<device_vsyn
c
  650          STRB    r0,[r1,#IOCIRQCLRA
]
  660          LDR     r0,each
  670          MOV     r0,r0,LSR #6
  680          STRB    r0,[r1,#Timer1LL]
  690          MOV     r0,r0,ASR #8
  700          STRB    r0,[r1,#Timer1LH]
  710          STRB    r0,[r1,#Timer1GO]
  720          MOV     r0,#0
  730          SUB     r0,r0,#56+2
  740          STR     r0,hline
  750          LDR     r0,frame
  760          ADD     r0,r0,#1
  770          STR     r0,frame
  780          LDR     r0,off
  790          LDR     r1,speed
  800          ADD     r0,r0,r1
  810          STR     r0,off
  820          LDMFD   (sp)!,{r0-r2,pc}^
  830
  840 .event_swap
  850          STMFD   (sp)!,{r0-r3,link}
  860          MOV     r14,#IOC
  870          MOV     r0,#1<<device_time
r1
  880          STRB    r0,[r14,#IOCIRQCLR
A]
  890          LDR     r3,hline
  900          ADDS    r3,r3,#1
  910          AND     r3,r3,#255
  920          STR     r3,hline
  930          LDR     r1,off
  940          RSBS    r0,r3,#128
  950          RSBMI   r0,r0,#0
  960          SUB     r0,r0,r1,LSL #1
  970          MOV     r1,#1024
  980          SUB     r1,r1,#1
  990          AND     r0,r0,r1
 1000          ADR     r1,table
 1010          ADD     r14,r1,r0,LSL #3
 1020          LDMIA   r14,{r1,r14}
 1030          AND     r3,r3,#3
 1040          MOV     r3,r3,LSL #1
 1050          ORR     r1,r1,r3,LSL #26
 1060          MOV     r2,#VIDC
 1070          MOV     r0,#&FF0
 1080          ORR     r0,r0,#&00F+(8<<26
)
 1090          STR     r1,[r2]
 1100          EOR     r1,r1,r0
 1110          STR     r1,[r2]
 1120          ADD     r3,r3,#1
 1130          ORR     r1,r14,r3,LSL #26
 1140          STR     r1,[r2]
 1150          EOR     r1,r1,r0
 1160          STR     r1,[r2]
 1170          LDMFD   (sp)!,{r0-r3,pc}^
 1180
 1190 .set_timer
 1200          STMFD   (sp)!,{r0,r1,link}
 1210          MOV     r1,#IOC
 1220          STRB    r0,[r1,#Timer1LL]
 1230          MOV     r0,r0,ASR #8
 1240          STRB    r0,[r1,#Timer1LH]
 1250          STRB    r0,[r1,#Timer1GO]
 1260          LDMFD   (sp)!,{r0,r1,pc}
 1270
 1280 .calibrate
 1290          STMFD   (sp)!,{r0-r12,link
}
 1300          MOV     r0,#EventV
 1310          ADR     r1,event_vsync
 1320          MOV     r2,#0
 1330          SWI     "XOS_Claim"
 1340          MOV     r0,#14
 1350          MOV     r1,#4
 1360          SWI     "XOS_Byte"
 1370          MVN     r0,#2
 1380          STR     r0,frame
 1390 .wait_until_zero
 1400          LDR     r0,frame
 1410          CMP     r0,#0
 1420          BNE     wait_until_zero
 1430          MOV     r2,#0
 1440 .count_loop
 1450          LDR     r1,frame
 1460          CMP     r1,r0
 1470          BEQ     count_loop
 1480          LDR     r3,time
 1490          ADD     r2,r2,r3
 1500          MOV     r0,r1
 1510          CMP     r0,#8
 1520          BNE     count_loop
 1530          STR     r2,total
 1540          MOV     r0,#13
 1550          MOV     r1,#4
 1560          SWI     "XOS_Byte"
 1570          MOV     r0,#EventV
 1580          ADR     r1,event_vsync
 1590          MOV     r2,#0
 1600          SWI     "XOS_Release"
 1610          LDMFD   (sp)!,{r0-r12,pc}
 1620
 1630 .doit    STMFD   (sp)!,{r0-r12,link
}
 1640          MOV     r0,#device_vsync
 1650          ADR     r1,event_start
 1660          MOV     r2,#0
 1670          SWI     "XOS_ClaimDeviceVe
ctor"
 1680          MOV     r0,#device_timer1
 1690          ADR     r1,event_swap
 1700          MOV     r2,#0
 1710          SWI     "XOS_ClaimDeviceVe
ctor"
 1720          MOV     r7,#IOC
 1730          SWI     "XOS_EnterOS"
 1740          MOV     r9,pc
 1750          ORR     r8,r9,#&0C000000
 1760          TEQP    r8,#0
 1770          LDRB    r0,[r7,#IOCIRQMSKA
]
 1780          ORR     r0,r0,#1<<timer1_b
it
 1790          STRB    r0,[r7,#IOCIRQMSKA
]
 1800          LDRB    r0,[r7,#IOCIRQMSKB
]
 1810          STRB    r0,wasb
 1820          BIC     r0,r0,#%11100111
 1830          STRB    r0,[r7,#IOCIRQMSKB
]
 1840          TEQP    r9,#0
 1850 .doitloop
 1860          LDR     r0,frame
 1870          TST     r0,#1
 1880          BNE     doitloop
 1890 .waitonemore
 1900          LDR     r0,frame
 1910          TST     r0,#1
 1920          BEQ     waitonemore
 1930          TEQP    r8,#0
 1940          LDRB    r0,[r7,#IOCIRQMSKB
]
 1950          ORR     r0,r0,#%11000000
 1960          STRB    r0,[r7,#IOCIRQMSKB
]
 1970          TEQP    r9,#0
 1980          MOV     r1,#256-84
 1990          BL      inkey
 2000          MOVEQ   r1,#1
 2010          STREQ   r1,speed
 2020          MOV     r1,#256-82
 2030          BL      inkey
 2040          MOVEQ   r1,#0
 2050          STREQ   r1,speed
 2060          MOV     r1,#256-113
 2070          BL      inkey
 2080          TEQP    r8,#0
 2090          LDRB    r0,[r7,#IOCIRQMSKB
]
 2100          BIC     r0,r0,#%11000000
 2110          STRB    r0,[r7,#IOCIRQMSKB
]
 2120          TEQP    r9,#0
 2130          CMP     r1,#255
 2140          BNE     doitloop
 2150          TEQP    r8,#0
 2160          LDRB    r0,[r7,#IOCIRQMSKA
]
 2170          BIC     r0,r0,#(1<<timer1_
bit)
 2180          STRB    r0,[r7,#IOCIRQMSKA
]
 2190          LDRB    r0,wasb
 2200          STRB    r0,[r7,#IOCIRQMSKB
]
 2210          TEQP    r9,#3
 2220          MOVNV   r0,r0
 2230          MOV     r0,#device_vsync
 2240          ADR     r1,event_start
 2250          MOV     r2,#0
 2260          SWI     "XOS_ReleaseDevice
Vector"
 2270          MOV     r0,#device_timer1
 2280          ADR     r1,event_swap
 2290          MOV     r2,#0
 2300          SWI     "XOS_ReleaseDevice
Vector"
 2310          LDMFD   (sp)!,{r0-r12,pc}
 2320
 2330 .inkey
 2340          STMFD   (sp)!,{link}
 2350          MOV     r0,#129
 2360          MOV     r2,#255
 2370          SWI     "XOS_Byte"
 2380          CMP     r1,#255
 2390          LDMFD   (sp)!,{pc}
 2400
 2410 .total   EQUD    0
 2420 .each    EQUD    0
 2430 .time    EQUD    0
 2440 .hline   EQUD    0
 2450 .frame   EQUD    0
 2460 .off     EQUD    0
 2470 .wasb    EQUD    0
 2480 .speed   EQUD    1
 2490 ]
 2500 table=P%:P%+=1024*4
 2510 NEXT pass%
 2520 ENDPROC
 2530 :
 2540 DEF PROCdemo_screen
 2550 DIM l%(2),n%(2)
 2560 VDU 23,2,%11000001,%11001110,%1111
0001,%11111110,%11000001,%11001110,%1111
0001,%11111110
 2570 SYS "XFont_FindFont",,"Trinity.Bol
d",40*16,40*16,0,0 TO hand%;ok%
 2580 IF (ok% AND 1)>0 hand%=0
 2590 IF hand%>0 THEN
 2600  SYS "Font_SetFont",hand%
 2610  SYS "Font_SetFontColours",hand%,8
,8,0
 2620 ELSE
 2630  VDU 5
 2640  GCOL 0,8
 2650  VDU 23,17,7,6,28;32;0;
 2660 ENDIF
 2670 PROCmess(782,"Demonstrating",hand%
)
 2680 PROCmess(512,"colour interrupts",h
and%)
 2690 PROCmess(242,"on the Arc",hand%)
 2700 IF hand%>0 SYS "Font_LoseFont",han
d%
 2710 GCOL 3,8
 2720 CIRCLE FILL 640,512,500
 2730 GCOL 16+3,0
 2740 RECTANGLE FILL 0,0,1279,1023
 2750 ENDPROC
 2760 :
 2770 DEF PROCrand_colours
 2780 step%=30
 2790 FOR i%=0 TO 1023 STEP step%
 2800  IF i%<1024-step% THEN
 2810   n%()=l%()
 2820   r%=RND(3)-1
 2830   REPEAT
 2840    CASE RND(2) OF
 2850     WHEN 1:IF n%(r%)>0 n%(r%)-=5
 2860     WHEN 2:IF n%(r%)<15 n%(r%)+=5
 2870    ENDCASE
 2880   UNTIL n%(r%)<>l%(r%)
 2890  ELSE
```

```
2900   n%()=0
2910  ENDIF
2920  e%=i%+step%
2930  IF e%>1024 e%=1024
2940  PROCscale(i%,e%,l%(0),l%(1),l%(2),n%(0),n%(1),n%(2))
2950  l%()=n%()
2960 NEXT
2970 ENDPROC
2980 :
2990 DEF PROCscale(i0%,i1%,r1,g1,b1,r2,g2,b2)
3000 LOCAL i%,dr,dg,db
3010 dr=(r2-r1)/(i1%-i0%)
3020 dg=(g2-g1)/(i1%-i0%)
3030 db=(b2-b1)/(i1%-i0%)
3040 FOR i%=i0% TO i1%-1
3050  r1%=FNint(r1-0.25)
3060  g1%=FNint(g1-0.25)
3070  b1%=FNint(b1-0.25)
3080  table!(8*i%)=r1%+16*g1%+256*b1%
3090  r1%=FNint(r1+0.25)
3100  g1%=FNint(g1+0.25)
3110  b1%=FNint(b1+0.25)
3120  table!(8*i%+4)=r1%+16*g1%+256*b1%
3130  r1+=dr
3140  g1+=dg
3150  b1+=db
3160 NEXT
3170 ENDPROC
3180 :
3190 DEF FNint(i)
3200 LOCAL i%
3210 i%=INT(i)
3220 IF i%<0 i%=0 ELSE IF i%>&F i%=&F
3230 =i%
3240 :
3250 DEF PROCmess(y%,t$,hand%)
3260 IF hand%=0 THEN
3270  MOVE 640-28*LEN(t$),y%+32
3280  PRINT t$
3290 ELSE
3300  SYS "Font_StringBBox",,t$ TO ,,,x1%,y1%
3310  x1%=x1%*180/72000
3320  y1%=y1%*180/72000
3330  SYS "Font_Paint",,t$,16,640-x1%/2,y%-y1%/2
3340 ENDIF
3350 ENDPROC
```

Listing 4 – CrazyLet

```
10 REM >Crazylet (Info4)
20 REM by Jan Vibe
30 REM for 32-bit machines
40 REM (c) BAU July 1992
50 :
60 MODE 13
70 a$="Archimedes"
80 DIM a1%(20),a2%(20),t1%(20),t2%(20),c%(20),xz%(20),yz%(20)
90 l%=LEN(a$)
100 s1%=1
110 s2%=2
120 FOR n%=1 TO l%
130 a1%(n%)=RND(360)-1
140 a2%(n%)=RND(360)-1
150 t1%(n%)=RND(17)+3
160 t2%(n%)=RND(17)+3
170 c%(n%)=RND(63)
180 NEXT
190 VDU 5
200 OFF
210 ON ERROR VDU 4:SYS 6,112,s1%:REPORT:PRINT" at line "STR$ERL:ON:END
220 REPEAT
230 x%=320
240 c%(RND(l%))=RND(63)
250 FOR n%=1 TO l%
260 a1%(n%)=(a1%(n%)+t1%(n%)) MOD 360
270 a2%(n%)=(a2%(n%)+t2%(n%)) MOD 360
280 xz%(n%)=16*(SINRAD(a1%(n%))+1)+8
290 yz%(n%)=32*(SINRAD(a2%(n%))+1)+8
300 x%-=xz%(n%)
310 NEXT
320 x%=2*x%
330 FOR n%=1 TO l%
340 y%=512+2*yz%(n%)
350 MOVE x%,y%
360 VDU 23,17,7,6,xz%(n%);yz%(n%)|
370 GCOL c%(n%)
380 PRINT MID$(a$,n%,1);
390 x%+=4*xz%(n%)
400 NEXT
410 WAIT
420 SYS 6,112,s1%
430 SYS 6,113,s2%
440 CLS
450 SWAP s1%,s2%
460 UNTIL FALSE
```

Listing 5 – Dali

```
10 REM >Dali (Info5)
20 REM by Jan Vibe
30 REM for 32-bit machines
40 REM (c) BAU July 1992
50 :
60 MODE 12
70 MODE 140
80 OFF
90 ORIGIN 640,512
100 s1%=1
110 s2%=2
120 w%=0
130 title$="Time Warp"
140 p%=360/LEN(title$)
150 ON ERROR SYS 6,112,s1%:VDU4:ON:REPORT:PRINT" at line "STR$ERL:END
160 COLOUR 0,0,0,255
170 COLOUR 8,255,192,0
180 COLOUR 9,0,0,0
190 VDU 19,0,24,0,0,255,5
200 REPEAT
210 tid$=RIGHT$(TIME$,8)
220 WAIT
230 SYS 6,112,s1%
240 SYS 6,113,s2%
250 CLS
260 SWAP s1%,s2%
270 t%=0
280 w%=(w%+5) MOD 360
290 v%=(v%+20) MOD 360
300 x%=(-16*LEN(title$))/2-16
310 GCOL 8
320 FOR n%=1 TO LEN(title$)
330 MOVE x%+16*n%,20*SINRAD(v%+p%*n%)+230
340 PRINT MID$(title$,n%,1)
350 NEXT
360 FOR n%=6 TO 360 STEP 6
370 r%=390+90*SINRAD(2*n%+w%)
380 z%=8
390 GCOL 2
400 IF n% MOD 30=0 z%=24:GCOL 1:t%+=1
410 CIRCLE FILL r%*SINRAD(n%),r%*COSRAD(n%),z%
420 IF z%>8 THEN
430 b%=8
440 IF t%>9 b%=16
450 MOVE r%*SINRAD(n%)-b%,r%*COSRAD(n%)+12
460 GCOL 3
470 PRINT STR$t%
480 ENDIF
490 NEXT
500 tim%=VAL(MID$(tid$,1,2))
510 tim%=tim% MOD 12
520 min%=VAL(MID$(tid$,4,2))
530 sek%=VAL(MID$(tid$,7,2))
540 at%=30*tim%+min%/2+sek%/120
550 am%=6*min%+sek%/10
560 as%=6*sek%
570 PROCh(230+90*SINRAD(2*at%+w%),at%,6)
580 PROCh(320+90*SINRAD(2*am%+w%),am%,5)
590 PROCh(350+90*SINRAD(2*as%+w%),as%,3)
600 GCOL 0
610 CIRCLE FILL 0,0,32
620 GCOL 7
630 CIRCLE 0,0,32
640 CIRCLE FILL 0,0,12
650 UNTIL FALSE
660 :
670 DEF PROCh(z%,a%,c%)
680 LOCAL x2%,y2%,x3%,y3%,x4%,y4%
690 x2%=z%*SINRAD(a%-6)/2
700 y2%=z%*COSRAD(a%-6)/2
710 x3%=z%*SINRAD(a%+6)/2
720 y3%=z%*COSRAD(a%+6)/2
730 x4%=z%*SINRAD(a%)
740 y4%=z%*COSRAD(a%)
750 GCOL c%
760 MOVE 0,0
770 MOVE x2%,y2%
780 PLOT 85,x3%,y3%
790 PLOT 85,x4%,y4%
800 ENDPROC
```

Listing 6 – Fern

```
10 REM >Fern (Info6)
20 REM by Jan Vibe
30 REM for 32-bit machines
40 REM (c) BAU July 1992
50 :
60 MODE 128
70 MODE 0
80 OFF
90 s1%=1
100 s2%=2
110 k%=32
120 k2%=k%/2
130 t1%=0
140 t2%=120
150 t3%=240
160 DIM spr &79000
170 spr!0=&78FFF
180 spr!4=0
190 spr!8=16
200 spr!12=16
210 COLOUR 0,80,80,80
220 VDU 19,0,24,80,80,80
230 PROCs
240 ON ERROR SYS 6,112,s1%:SYS "Hourglass_Smash":PRINTREPORT$" at line "STR$ERL:ON:END
250 SYS "Hourglass_On"
260 FOR i%=1 TO 23
270 SYS "Hourglass_Percentage",i%*4.347
280 s$=STR$i%
290 PROCs
300 PROCflip
310 t=20*SINRAD(7.5*i%+90)
320 PROCa(640,0,155,0,1)
330 SYS 46,256+16,spr,s$,0,0,-0,1279,1023
340 NEXT
350 SYS "Hourglass_Off"
360 a%=43
370 REPEAT
380 a%=(a%+1) MOD 44
390 b%=ABS(22-a%)+1
400 s$=STR$b%
410 PROCflip
420 SYS 46,256+34,spr,s$,0,0,0
430 w%=INKEY(2)
440 UNTIL FALSE
450 :
460 DEF PROCflip
470 SYS 6,112,s1%
480 SYS 6,113,s2%
490 WAIT
500 CLS
510 SWAP s1%,s2%
520 ENDPROC
530 :
540 DEF PROCa(x,y,z,a,m%)
550 LOCAL x1,y1
560 IF z<=3 ENDPROC
570 x1=x+z*SINRAD(a)
580 y1=y+z*COSRAD(a)
590 LINE x,y,x1,y1
600 PROCa(x1,y1,0.85*z,a+t*m%,m%)
610 PROCa(x1,y1,0.35*z,a-60*m%,m%)
620 PROCa(x1,y1,0.35*z,a+60*m%,-m%)
630 ENDPROC
640 :
650 DEF PROCs
660 t1%=(t1%+RND(4)) MOD 360
670 t2%=(t2%+RND(4)) MOD 360
680 t3%=(t3%+RND(4)) MOD 360
690 COLOUR 1,127*(SINRAD(t1%)+1),127*(SINRAD(t2%)+1),127*(SINRAD(t3%)+1)
700 ENDPROC
```

Listing 7 – Gouraud

```
10 REM >Gouraud (Info7)
20 REM by David Walters
30 REM for 32-bit machines
40 REM (c) BAU July 1992
50 :
60 MODE 15
70 DIM p%(1000,2),g%(20)
80 DIM vdu% 16
90 !vdu%=149
100 vdu%!4=-1
110 SYS "OS_ReadVduVariables",vdu%,vdu%+8
120 scr=vdu%!8
130 COLOUR 128+57 TINT 128
140 CLS
150 OFF
160 REPEAT
170 PROCpalette
180 k%=0
190 PROCtri(RND(639),RND(255),RND(639),RND(255),RND(639),RND(255),0,127,255)
200 UNTIL FALSE
210 :
220 DEF PROCtri(ax,ay,bx,by,cx,cy,ai,bi,ci)
230 IF ay<by SWAP ax,bx:SWAP ay,by:SWAP ai,bi
240 IF by<cy SWAP bx,cx:SWAP by,cy:SWAP bi,ci
250 IF ay<by SWAP ax,bx:SWAP ay,by:SWAP ai,bi
260 PROCline(cx,cy,bx,by,ci,bi)
270 PROCline(bx,by,ax,ay,bi,ai)
280 k2%=k%
290 PROCline(cx,cy,ax,ay,ci,ai)
300 FOR k%=0 TO k2%-1
310 a=p%(k%,0)
320 b=p%(k%+k2%,0)
330 i1=p%(k%,2)
340 i2=p%(k%+k2%,2)
350 IF a>b SWAP a,b:SWAP i1,i2
360 ii=i1
370 IF a=b is=0 ELSE is=(i2-i1)/(b-a)
380 e%=0
390 q%=scr+640*p%(k%,1)
400 FOR j%=a TO b-1
410 ii+=is
420 b%=ii/16
430 e%+=ii-b%*16
440 IF e%>=16 b%+=1:e%=e% AND 15
450 q%?j%=g%(b%)
460 NEXT
470 NEXT
480 ENDPROC
490 :
500 DEF PROCline(x%,y%,x2%,y2%,i1,i2)
510 IF y2%=y% is=0 ELSE is=(i2-i1)/(y2%-y%)
520 ii=i1
530 dy%=ABS(x2%-x%)
540 dx%=y2%-y%
550 s1%=SGN(x2%-x%)
560 e%=-dx%
570 i%=1
580 REPEAT
590 p%(k%,0)=x%
600 p%(k%,1)=y%
610 ii+=is
620 p%(k%,2)=ii
630 e%+=dy%<<1
640 k%+=1
650 REPEAT
660 IF e%>=0 x%+=s1%
670 IF e%>=0 e%-=dx%<<1
680 UNTIL e%<0
690 y%+=1
700 i%+=1
710 UNTIL i%>dx%
720 ENDPROC
730 :
740 DEF PROCpalette
750 REPEAT
760 r%=RND(2)-1
770 g%=RND(2)-1
780 b%=RND(2)-1
790 UNTIL r% OR g% OR b%
800 FOR i%=0 TO 15
810 PROCset_col(r%*i%,g%*i%,b%*i%)
820 POINT 0,1023
830 g%(i%)=?scr
840 NEXT
850 g%(16)=g%(15)
860 ENDPROC
870 :
880 DEF PROCset_col(r%,g%,b%)
890 GCOL (b% AND 12)*4+(g% AND 12)+r%/4 TINT ((r% OR g% OR b%) AND 3)*64
900 ENDPROC
```

Listing 8 – BBC-DLI

```
10 REM >BBC-DLI (Info8)
20 REM By Tristram Mabbs
30 REM For BBC B/B+
40 REM (C) BAU 1984 & July 1992
50 :
60 MODE 6
70 PROCinit_demo
80 PROCset_dlis(DLIs)
90 *KEY 0 LIST|M
100 *FX 138,0,128
110 END
120 :
130 DEF PROCinit_demo
140 DIM cols(6),DLIs 50
150 FOR i=0 TO 6
160 READ cols(i)
170 NEXT
180 lineval=&260
190 FOR i=0 TO 17 STEP 3
200 DLIs!i=4*lineval
210 ?(DLIs+2+i)=(((i/3)AND7)+1) OR &10
220 NEXT
230 DLIs!i=TRUE
240 ENDPROC
250 :
260 DATA 2,4,16,2,2,4,2
270 :
280 DEF PROCset_dlis(data)
290 A%=135
300 Mode=((USR(&FFF4)AND&FF0000)/&10000)
310 DIM code FNassemble(0,&C000)
320 A=FNassemble(0,code)
330 A=FNassemble(2,code)
340 A=?data+&A8
350 ?data=A
360 data?1=((data?1)+((A AND &F00)/&100)+6)
370 CALL install
380 ENDPROC
390 :
400 DEF FNassemble(pass,addr)
410 P%=addr
420 [OPT pass
430 .install
440 SEI
450 LDA &204
460 STA oldIRQ
470 LDA &205
480 STA oldIRQ+1
490 LDA #newIRQ MOD 256
500 STA &204
510 LDA #newIRQ DIV 256
520 STA &205
530 CLI
540 RTS
550 :
560 .newIRQ
570 LDA &FC
580 PHA
590 TXA
600 PHA
610 TYA
620 PHA
630 LDA &FE4D
640 AND &FE4E
650 AND #&20
660 BNE DLI
670 LDA &FE4D
680 AND &FE4E
690 AND #2
700 BNE FSI
710 .IRQexit
720 PLA
730 TAY
740 PLA
750 TAX
760 PLA
770 STA&FC
780 JMP (oldIRQ)
790 :
800 .FSI
810 LDA &FE4E
820 AND #&20
830 BEQ IRQexit
840 LDA #0
850 STA colcount
860 .DLI
870 STA &FE4D
880 LDX colcount
890 LDA data+1,X
900 AND data,X
910 CMP #&FF
920 BNE P%+10
930 LDA #0
940 STA colcount
950 JMP Time
960 LDA data+2,X
970 AND #&F0
980 LSR A
990 LSR A
1000 LSR A
```

```
1010 LSR A
1020 TAY
1030 LDA data+2,X
1040 AND #&F
1050 EOR #7
1060 :
1070 OPT EVAL("FNcols"+STR$cols(Mode))
1080 :
1090 .Time
1100 LDA &FE4B
1110 AND #&DF
1120 STA &FE4B
1130 LDX colcount
1140 LDA data,X
1150 STA &FE48
1160 INX
1170 LDA data,X
1180 STA &FE49
1190 INX
1200 INX
1210 STX colcount
1220 LDA #&A0
1230 STA &FE4D
1240 STA &FE4E
1250 JMP IRQexit
1260 :
1270 .oldIRQ
1280 EQUW 0
1290 .colcount
1300 EQUB 0
1310 .col2base
1320 EQUB 0
1330 EQUB &80
1340 .col4base
1350 EQUB 0
1360 EQUB &20
1370 EQUB &80
1380 EQUB &A0
1390 .col16base
1400 EQUB 0
1410 ]
1420 =P%-addr
1430 :
1440 DEF FNcols2
1450 [OPT pass
1460 PHA
1470 TYA
1480 AND #1
1490 TAY
1500 PLA
1510 ORA col2base,Y
1520 LDX #7
1530 .c2loop
1540 STA &FE21
1550 CLC
1560 ADC #&10
1570 DEX
1580 BPL c2loop
1590 ]
1600 =pass
1610 :
1620 DEF FNcols4
1630 [OPT pass
1640 PHA
1650 TYA
1660 AND #3
1670 TAY
1680 PLA
1690 ORA col4base,Y
1700 LDX #3
1710 STA &FE21
1720 CLC
1730 ADC #&10
1740 STA &FE21
1750 CLC
1760 ADC #&30
1770 STA &FE21
1780 CLC
1790 ADC #&10
1800 STA &FE21
1810 ]
1820 RETURN
1830 :
1840 DEF FNcols16
1850 [OPT pass
1860 STA col16base
1870 TYA
1880 ASL A
1890 ASL A
1900 ASL A
1910 ASL A
1920 ORA col16base
1930 STA &FE21
1940 ]
1950 RETURN
1960 :
1970 DEF PROCdlisoff
1980 ?&FE4E=&20
1990 ENDPROC
2000 :
2010 DEF PROCdlison
2020 ?&FE4E=&A0
2030 ENDPROC
```

Listing 9 – ABCDir

```
   10 REM >ABCDir (Info9)
   20 REM By Nick Craig-Wood
   30 REM For 32 bit machines
   40 REM (C) BAU July 1992
   50 :
   60 DIM block% 256
   70 name%=block%+&14
   80 ?block%=3
   90 SYS "OS_Word",14,block%
  100 execaddr%=!block%
  110 loadaddr%=&FFFFFD00 OR (block%?4)
  120 DIM dirs$(1000)
  130 level%=0
  140 INPUT "Start directory (default =
@) : ";dir$
  150 IF dir$="" dir$="@"
  160 PROClook(dir$,0)
  170 END
  180 :
  190 DEF PROClook(dir$,start%)
  200 LOCAL p%,level%
  210 level%=start%
  220 p%=0
  230 REPEAT
  240 SYS "OS_GBPB",10,dir$,block%,1,p%,
240 TO ,,,,p%
  250 IF (p%>=0) AND (block%!&10=2) THEN
  260 name$=dir$+"."
  270 a%=name%
  280 WHILE ?a%<>0
  290 name$+=CHR$?a%
  300 a%+=1
  310 ENDWHILE
  320 dirs$(level%)=name$
  330 level%+=1
  340 PROClook(name$,level%)
  350 ENDIF
  360 UNTIL p%=-1
  370 IF level%>start% THEN
  380 PRINT
  390 FOR i%=start% TO level%-1
  400 SYS "OS_File",2,dirs$(i%),loadaddr
%
  410 SYS "OS_File",3,dirs$(i%),,execadd
r%
  420 PRINT dirs$(i%)
  430 NEXT i%
  440 ENDIF
  450 ENDPROC
```

Listing 10 – Chaos

```
   10 REM >Chaos By Matthew Godbolt and
Richard Talbot-Watkins (C) BAU July 1992
 (Info10)
   20 MODE1:INPUTa,b,c:q=512:VDU29,640;q
;12:t=0:v=0:f=q:FORi=0TO99:s=t-SGNv*ABS(
v*b-c):t=a-v:k=ABS(s*f)>q ORABS(t*f)>q:f
=f/(1-k*.2):v=s:NEXT:f=f/1.5:t=0:v=0:k=0
:REPEATs=t-SGNv*ABS(v*b-c):t=a-v:GCOL0,k
+1:PLOT69,s*f,t*f:v=s:k=(k+1)MOD3:UNTIL0
```

Listing 11 – Weed

```
   10 REM >Weed By Matthew Godbolt and R
ichard Talbot-Watkins (C) BAU July 1992
(Info11)
   20 MODE1:VDU23;8202;0;0;0;19,3,6;0;:D
IMC 256:W=0:FORN=0TO255:C?N=0:NEXT:REPEA
TX=RND(256)-1:Y=C?X:A=C?(X-1AND255):B=C?
(X+1AND255):A=(A AND(A>B))+(B AND(A<=B))
:Y=Y+(Y-A)*(A>Y)+1:C?X=Y:W=W+1:GCOL0,(W
DIV512)MOD3+1:PLOT69,128+X*4,Y*4:UNTILY>
250
```

Listing 12 – MarsScape

```
   10 REM >MarsScape By Peter Warden (C)
 BAU July 1992 (Info12)
   20 MODE9:FORc=1TO16:COLOURc-1,c*16,c*
4,0:NEXT:OFF:DIMm(320,256):FORx=1TO320:F
ORy=1TO256:m(x,y)=((m(x,y-1)+m(x-1,y))/2
)+((RND(2000)-1000)/1000):GCOLm(x,y)+4:P
LOT 69,x*4,y*4:NEXT:NEXT
```

Listing 13 – GasPlanet

```
   10 REM >GasPlanet By Peter Warden (C)
 BAU July 1992 (Info13)
   20 MODE12:FORc=0TO15:COLOURc,c*16,c*8
,0:NEXT:DIMm(256,360):FORx=1TO255:FORy=1
TO360:m(x,y)=((m(x,y-1)+m(x-1,y))/2)+((R
ND(2000)-1000)/1000):GCOLm(x,y)+5:PLOT69
,((x-128)*(((32761-(y-180)^2)^.5)/128)*1
.4)+640,(y*1.4)+256:NEXT:NEXT
```

C PROGRAMMING

Typing in the C application.

MakeDat - Creates !Timely application. – Basic Program
C listing 1 – Save as $.!Timely.c.Timely – Text file
C listing 2 – Save as $.!Timely.Make – Obey File
C listing 3 – Save as $.!Timely.MakeFile – Makefile
C listing 4 – Save as $.UserCLib.c.DrawUtils – Textfile
C listing 5 – Save as $.UserCLib.c.FontUtils – Textfile
C listing 6 – Save as $.UserCLib.c.Memory – Textfile
C listing 7 – Save as $.UserCLib.c.UserLib – Textfile
C listing 8 – Save as $.UserCLib.c.WimpUtils – Textfile
C listing 9 – Save as $.UserCLib.h.DrawUtils – Textfile
C listing 10 – Save as $.UserCLib.h.FontUtils – Textfile
C listing 11 – Save as $.UserClib.h.Macros – Textfile
C listing 12 – Save as $.UserCLib.h.Memory – Textfile
C listing 13 – Save as $.UserCLib.h.UserLib – Textfile
C listing 14 – Save as $.UserCLib.h.WimpUtils – Textfile

Because many of the lines are longer than 40 characters a RETURN is donated by a paragraph character (¶). When typing the listings into Edit or SrcEdit only press return when you encounter such a character. Do not type in the ¶ character.

The full Timley application can be found on the monthly disc, in compiled and un-compiled states.

Listing 1

```
   10 REM >MakeDat (C1)
   20 REM Create various !Timely files
   30 REM for 32-bit machines
   40 REM by Dave Acton
   50 REM (c) BAU July 1992
   60 :
   70 free%=(HIMEM-END-&8000) AND &FFFFF
000
   80 DIM w% free%
   90 REPEAT
  100 READ file$
  110 IF file$<>"*" THEN
  120 READ type%
  130 PRINT"Creating file """file$""" (t
ype &";~type%;")"
  140 IF type%=&FFF OR type%=&FEB THEN
  150 out%=OPENOUT(file$)
  160 REPEAT
  170 READ line$
  180 IF line$<>"*" BPUT#out%,line$
  190 UNTIL line$="*"
  200 CLOSE#out%
  210 ELSE
  220 READ olen%
  230 p%=0
  240 d$=""
  250 dl%=1
  260 WHILE p%<olen%
  270 b%=FNb
  280 IF b%=130:p%?w%=FNb:p%+=1
  290 IF b%>=131 AND b%<=162 THEN
  300 n%=b%-128
  310 f%=p%-FNb
  320 FOR i%=0 TO n%-1
  330 ?(w%+p%+i%)=?(w%+f%+i%)
  340 NEXT
  350 p%+=n%
  360 ENDIF
  370 IF b%<130 OR b%>162 THEN p%?w%=b%:
p%+=1
  380 ENDWHILE
  390 SYS "OS_File",0,file$,,,w%,w%+p%
  400 ENDIF
  410 SYS "OS_File",18,file$,type%
  420 ENDIF
  430 UNTIL file$="*"
  440 PRINT'"All files created okay"
  450 END
  460 :
  470 DEF FNb
  480 LOCAL b%,c1%,c2%,i%
  490 IF d$="" THEN
  500 READ d$,c1%
  510 c2%=0
  520 FOR i%=1 TO LEN(d$)/2
  530 c2%+=EVAL("&"+MID$(d$,2*i%-1,2))
  540 NEXT
  550 IF c1%<>(c2% MOD 100) PRINT"Error
in DATA line ";dl%:END
  560 dl%+=1
  570 ENDIF
  580 b%=EVAL("&"+LEFT$(d$,2))
  590 d$=MID$(d$,3)
  600 =b%
  610 DATA "!Boot",&FEB
  620 DATA "IconSprites <Obey$Dir>.!Spri
tes"
  630 DATA *
  640 DATA "!Config",&FFF
  650 DATA "96 40 3 1 -1"
  660 DATA "%Y,%a,%b,%d,%Y"
  670 DATA "homerton.bold 12 14"
  680 DATA "homerton.bold 10 11"
  690 DATA "corpus.bold 12 12"
  700 DATA "trinity.bold 10 10"
  710 DATA "200 80 3 2 -1"
  720 DATA "%b %Y,%a,,%d,%b%y"
  730 DATA "homerton.bold 9 10"
  740 DATA "homerton.bold 9 10"
  750 DATA "corpus.bold 14 14"
  760 DATA "trinity.bold 18 18"
  770 DATA "512 120 3 -1 -1"
  780 DATA "Week starting %d %b %Y,%a,Ap
pointments,%d,Week%U"
  790 DATA "homerton.bold 12 14"
  800 DATA "homerton.bold 9 10"
  810 DATA "corpus.bold 12 12"
  820 DATA "corpus.bold 11 11"
  830 DATA "512 400 3 -1 -1"
  840 DATA "%a %d %b %Y,,Appointments,,%
d%b%y"
  850 DATA "homerton.bold 12 14"
  860 DATA "homerton.bold 8 10"
  870 DATA "homerton.bold 7 8"
  880 DATA "corpus.medium 13 13"
  890 DATA "Birthday"
  900 DATA "Holiday"
  910 DATA "Meeting"
  920 DATA "Deadline"
  930 DATA "#4"
  940 DATA "#5"
  950 DATA "#6"
  960 DATA "#7"
  970 DATA *
  980 DATA "!Run",&FEB
  990 DATA "| !Timely "
 1000 DATA "| Copyright DCA 1992"
 1010 DATA ""
 1020 DATA "Set Timely$Dir <Obey$Dir>"
 1030 DATA "IconSprites <Timely$Dir>.!Sp
rites "
 1040 DATA "|"
 1050 DATA "RMEnsure FPEmulator 2.80 RML
oad System:Modules.FPEmulator"
 1060 DATA "RMEnsure FPEmulator 2.80 Err
or You need FPEmulator 2.80 or later"
 1070 DATA "|"
 1080 DATA "RMEnsure SharedCLibrary 3.75
 RMLoad System:Modules.CLib"
 1090 DATA "RMEnsure SharedCLibrary 3.75
 Error You need SharedCLibrary 3.50 or l
ater"
 1100 DATA "|"
 1110 DATA "RMEnsure ColourTrans 0.52 RM
Load System:Modules.Colours"
 1120 DATA "RMEnsure ColourTrans 0.52 Er
ror You need ColourTrans 0.52 or later"
 1130 DATA "|"
 1140 DATA "wimpslot -min 480k -max 480k
"
 1150 DATA "|"
 1160 DATA "Run <Timely$Dir>.!RunImage %
*0"
 1170 DATA *
 1180 DATA "!Sprites",&FF9
 1190 DATA &258
 1200 DATA 01000000108304 5C020000,46
 1210 DATA 4C83042174696D656C7983,35
 1220 DATA 16000003871C840D1B8328,31
 1230 DATA 2C832C3C83310C841E7700,52
 1240 DATA 00118708830C7000031074,50
 1250 DATA B74B834E871037107477B7,7
 1260 DATA BB4B013377777777830400,25
 1270 DATA 71778310BB1B0073853C60,97
 1280 DATA 007484107B47871070008 3,52
 1290 DATA 28B77B832888108320833B,22
 1300 DATA 892003834083 4B17308850,60
 1310 DATA 8360831F010077BBBBBB87,5
 1320 DATA 80840F89103788A0872084,78
 1330 DATA A8857C86308797879E83A0,77
 1340 DATA 86488AD08F109F2070FFFF,24
 1350 DATA FFFF830486078C0D9819A2,78
 1360 DATA 31A253A275A297A2B9A2DB,14
 1370 DATA 92FDFF,54
 1380 DATA "Diary",&FFF
 1390 DATA "Timely"
 1400 DATA *
 1410 DATA "Sprites",&FF9
 1420 DATA &4C0
 1430 DATA 03000000108304C4040000,54
 1440 DATA 4C020000 2174696D656C79,71
 1450 DATA 83160000881C840D1B8328,60
 1460 DATA 2C832C3C0100000C841E77,73
 1470 DATA 0000118708830C70000310,34
 1480 DATA 74B74B831D871037107477,91
 1490 DATA B7BB4B0133777777778304,8
 1500 DATA 0071778310BB1B0073853C,1
 1510 DATA 60007484107B47871070 00,17
 1520 DATA 8328B77B83288810832083,94
 1530 DATA 3B892003834083 4B173088,39
 1540 DATA 508360831F010077BBBBBB,50
 1550 DATA 8780840F89103788A08720,81
```

```
1560 DATA 84A8857C86308797879E83,49
1570 DATA A086488AD08F109F2070FF,29
1580 DATA FFFFF830486078C0D9819,71
1590 DATA A231A253A275A297A2B9A2,57
1600 DATA DB93FD3401000072616469,88
1610 DATA 6F6F6E0000000000028306,71
1620 DATA 0A830A08830E1F83122C83,59
1630 DATA 16B0831A0C851E84237786,50
1640 DATA 0AF0840B22338916222288,41
1650 DATA 0D830BBB850D03850BBB86,56
1660 DATA 0D860B870D338718857384,96
1670 DATA 0D870B851A880B84278976,91
1680 DATA 844E8A0DFF8A1883FF8A0B,13
1690 DATA 890D87FF00000F880B8427,73
1700 DATA 8BFF8B0D8D308F48896004,87
1710 DATA 8B783401000072616469 6F,39
1720 DATA 6F666684FF0283F80A83FC,76
1730 DATA 0883FF1F83D32C83D7B083,64
1740 DATA DB0C89C9308BC811338A0B,73
1750 DATA 11890D830B880D850B851A,61
1760 DATA 10870B1111770000338A0B,15
1770 DATA 880D850B861A870B842789,7
1780 DATA 0B0000862186D786DD88EE,56
1790 DATA 88CE88F783FB85F784F9FF,23
1800 DATA 880B83FB890A8D0E83228D,37
1810 DATA 308D488D60877E00,59
1820 DATA "Templates",&FEC
1830 DATA &A16
1840 DATA FFFFFFFF00000000830485,88
1850 DATA 07828C830D5F8311018315,17
1860 DATA 54696D656C790DE5141082,36
1870 DATA 9DE5EB8325488315841878,89
1880 DATA 6665725F73656E640D44E2,45
1890 DATA 3302000005687186D61676E,17
1900 DATA 69666965720D8284E28289,95
1910 DATA 030000A9873050726F6749,36
1920 DATA 6E666F0D10C2E732050000,32
1930 DATA E4048660456E74832C40E0,20
1940 DATA 82900100EE8484831700C8,31
1950 DATA 838D748320D48340889860,42
1960 DATA 070000020001FF07020700,81
1970 DATA 03010C86AFFC83B8834C84,31
1980 DATA BC3D84AD82A086B484CC58,82
1990 DATA 83D184D888D987C84283E8,5
2000 DATA 3C83AF3883DCE483B788F7,98
2010 DATA 68835F5200018284835F01,2
2020 DATA 0C0E87198C5F849C308A5F,90
2030 DATA 536176652061733A0D0D0D,40
2040 DATA 65839A00C084A3837084C4,44
2050 DATA 829083783D829001C74F4B,14
2060 DATA 0D7469746C65643E0DF610,96
2070 DATA 83ECB8839016837CE48398,14
2080 DATA 11610017848484A31E83F8,5
2090 DATA 0A8740BA8840F100074387,45
2100 DATA 2084D44E83F1A683D0828E,3
2110 DATA 83F9EC83D8398340448740,82
2120 DATA 1083FF829A83FE0883F04A,24
2130 DATA 83D83884806000D73C556E,29
2140 DATA 8880E64484CFFEFFFFF483,40
2150 DATA F32C93206E83F20C848C83,64
2160 DATA E13C934046696C65206E61,19
2170 DATA 6D6583F269636E0DCE83C8,47
2180 DATA D083D4DE0300005083D483,30
2190 DATA FF005483FC640700001200,47
2200 DATA 0182840702070004 0D8719,56
2210 DATA FC83C40583F883E83D83F4,62
2220 DATA 842E860783AC87E41183F8,81
2230 DATA 833B00488718828483F028,94
2240 DATA 83F411F300074283E84683,72
2250 DATA EC0483FC828C8738C88820,52
2260 DATA F100074B83F44F87201283,93
2270 DATA E81483EC3A83F084F43D20,17
2280 DATA 0017828B0D89E88520E883,2
2290 DATA E8842018872 0828A8B20D8,42
2300 DATA 874084A19440842084 4084,96
2310 DATA C194407887D8829487C001,82
2320 DATA 0300D75487E40C83FB4D61,33
2330 DATA 676E69666965720D393939,24
2340·DATA 0D61302D398809390D3A0D,46
2350 DATA 8083FEF0020000FC8304C8,42
2360 DATA 0387EB83F66C0784DA0182,46
2370 DATA 84070207010C0E844883FF,65
2380 DATA FC838605866F3D83FE0030,61
2390 DATA 85B585807887721383EE09,41
2400 DATA 83F2A483543483F6548354,80
2410 DATA 6483FE3D3000B70D4B0D88,14
2420 DATA F6FE829A83F6CC83D67684,60
2430 DATA 7C842060000754696D656C,98
2440 DATA 790D72640D490D84208298,93
2450 DATA 8720C88440610007828B87,71
2460 DATA D61A83F284408458844082,55
2470 DATA 948720829887F628872030,33
2480 DATA 8760608740A887A41E83F4,98
2490 DATA 3E83F8D083B18488F883B9,89
2500 DATA 190000174E616D653A0D86,38
2510 DATA A00E83F2829C8720C48720,63
2520 DATA 507572706F73832383C084,70
2530 DATA 4468874082908740417574,42
2540 DATA 686F723A0D884038876084,19
2550 DATA 80846056657273696F6E85,31
2560 DATA 4041626F75742074686973,43
2570 DATA 2070726F6772616D0D84FF,92
2580 DATA 206D616E616765720DA920,77
2590 DATA 424155204A756C79203139,6
2600 DATA 39320D0DC083F584C17C03,53
2610 DATA 000014830483E484050070,63
2620 DATA 070000120005F707020701,94
2630 DATA 03010C85198294FEFFFFBC,4
2640 DATA 83F984263D83F500300000,35
2650 DATA 84078436380400008 3F8FF,19
2660 DATA 842A1F84C583E9C883E982,92
2670 DATA 8A835CF883F13D31000742,64
2680 DATA 87242883FDFE837484203E,22
2690 DATA 83508520829003C74F4B0D,19
2700 DATA 7469746C6583E97F4A8368,46
2710 DATA 8440B68B2043616E63656C,31
2720 DATA 0D85200683B882908371EC,53
2730 DATA 83BCC08460F10007438784,21
2740 DATA 84958420848060 83E08860,88
2750 DATA 4C6173740D874082928780,55
2760 DATA 844088804E657889202483,95
2770 DATA E88460829083F0856083A0,25
2780 DATA 44656C6574658A804C83F1,9
2790 DATA 3A83FF828883F91BB102C7,95
2800 DATA 4483E04583E40C83FC4083,41
2810 DATA E45083F86883EC8084E060,38
2820 DATA 00828720 0D6E89E0708720,60
2830 DATA 2C83C084201161 00C75787,66
2840 DATA C0844084E0108760846884,59
2850 DATA 605883E0598B6014876044,82
2860 DATA 86608297906084208460 84,75
2870 DATA 2084606B8F60D4FE86C084,30
2880 DATA 681BB122C76C83C06D8BC0,12
2890 DATA D8832084C00886C0A790C0,40
2900 DATA 842084C0842084C07F8FC0,38
2910 DATA 82988760846884C08083E0,56
2920 DATA 818BC0829C8760CC838883,79
2930 DATA C0B790C0842084C0842084,95
2940 DATA C082938BC07283D84C83F8,16
2950 DATA A683E0828885C002C78294,91
2960 DATA 83E0829587C0AE83F85083,25
2970 DATA F8D683A08086C0C78CC0DE,60
2980 DATA 8720829A02862084C0A78F,53
2990 DATA 60108760846884C0A883E0,26
3000 DATA A98B6014876044866 0D790,12
3010 DATA 6084208460842084C0BB8F,6
3020 DATA C0D483F884C0846884C0BC,55
3030 DATA 83E0BD8BC0D883F884C008,2
3040 DATA 86C0E790C0842084C08420,45
3050 DATA 84C0CF8FC0829887608468,15
3060 DATA 84C0D083E0D18BC0829C87,48
3070 DATA 60CC838883C0F790C08420,37
3080 DATA 84C0842084C0E38BC04E65,49
3090 DATA 7720656E74727 90D0D0D0D,65
3100 DATA 53726164696F6F66662C86,3
3110 DATA 096E93149314A228A250A2,59
3120 DATA 780D0D,46
3130 DATA *
```

C Listing 1

```
/* Title:   >c.Timely¶
*¶
* Purpose: Time manager¶
*¶
* (C) BAU 1992¶
*¶
*/¶
¶
#include "wimp.h"¶
#include "wimpt.h"¶
#include "win.h"¶
#include "event.h"¶
#include "baricon.h"¶
#include "res.h"¶
#include "resspr.h"¶
#include "menu.h"¶
#include "template.h"¶
#include "dbox.h"¶
#include "werr.h"¶
#include "flex.h"¶
#include "coords.h"¶
#include "bbc.h"¶
#include "visdelay.h"¶
#include "os.h"¶
#include "saveas.h"¶
#include "xferrecv.h"¶
#include "drawferror.h"¶
#include "drawfobj.h"¶
#include "drawfdiag.h"¶
#include "drawftypes.h"¶
#include "font.h"¶
#include <stdlib.h>¶
#include <string.h>¶
#include <time.h>¶
#include <limits.h>¶
#include "wimputils.h"¶
#include "memory.h"¶
#include "drawutils.h"¶
#include "fontutils.h"¶
#include "macros.h"¶
¶
#define tbord 64¶
#define lbord 64¶
#define rbord 8¶
#define bbord 8¶
#define draw_bord 140¶
#define id_enter  1¶
#define id_search 2¶
#define tml_qmenu_info     1¶
#define tml_qmenu_quit     2¶
#define timely_info_field 4¶
#define text_file_type 0xfff¶
#define draw_file_type 0xaff¶
#define timely_max_name_len 256¶
#define maxcol 13¶
#define maxrow 40¶
#define tasize sizeof(draw_textareastr
hdr)+sizeof(draw_textareastrend)+1¶
#define timely_maxwindows 64¶
¶
static char *timely_version_string="0.
02 (3 May 1992)";¶
static char temp_string[260],savetext[
256]="<Timely$Dir>.Diary";¶
static char *creator="Timely";¶
static menu tml_qmenu,tml_cmenu;¶
static int ftrans[256],enter_tag=0,ent
er_where;¶
static enum {save_as_text ,save_as_draw
,save_whole} save_mode;¶
static time_t ct[maxcol][maxrow];¶
static memory_block diary;¶
static dbox enter_box;¶
static time_t enter_time;¶
static BOOL enter_new;¶
static enum {entf_tm=0 ,entf_ok,entf_cn
c,entf_ms,entf_lst,entf_nxt,entf_del,ent
f_set};¶
typedef enum {never=-1 ,year,month,week
,day,hour} period;¶
¶
static struct {int cellw,cellh;¶
period cellperiod,xperiod,yperiod;¶
char name[40],xlab[16],ylab[16],clab[1
6],save[12];¶
font_desc font[4];¶
} style[4];¶
¶
static struct {wimp_w hand;¶
int ref;¶
memory_block diag;¶
char name[40],save[12];¶
time_t start;¶
period type;¶
int sizex,sizey;¶
} viewer[timely_maxwindows+1];¶
¶
typedef struct {draw_textareastrhdr
hdr;¶
draw_textareastrend end;¶
char string[1];¶
} draw_utils_text_area;¶
¶
typedef struct {int size;¶
time_t when;¶
int tag;¶
char message[1];¶
} diary_entry;¶
¶
typedef struct {int size;¶
time_t when;¶
int tag;¶
} diary_entry_hdr;¶
¶
static void timely_close_viewer(int i)¶
{ensure_memory(&viewer[i].diag ,0);¶
wimp_utils_close_window(viewer[i].ref)
;¶
viewer[i].hand=0;¶
}¶
¶
static int timely_entry(int i)¶
{diary_entry *d;¶
int j=0,off=0;¶
BOOL found=FALSE;¶
while (!found) {d=(diary_entry*)
(diary.anchor+off);¶
if (d->size!=0 && j<i) {=d->size ;¶
j++;¶
}¶
else found=TRUE;¶
}¶
return((d->size==0 && i==j)?-1:off);¶
}¶
¶
static void refresh_entry()¶
{int i;¶
strftime(temp_string,256,style[day].na
me,localtime(&enter_time));¶
dbox_setfield(enter_box,entf_tm,temp_s
tring);¶
for (i=0;i<8;i++)¶
dbox_setnumeric(enter_box,entf_set+3*i
,i==enter_tag);¶
}¶
¶
static void fill_in_entry()¶
{diary_entry *d;¶
if (enter_new) {dbox_setfield(enter_box
,entf_ms,"");¶
dbox_fadefield(enter_box,entf_lst);¶
dbox_fadefield(enter_box,entf_nxt);¶
win_settitle(dbox_syshandle(enter_box)
,"New entry");¶
}¶
else {d=(diary_entry*)
(diary.anchor+timely_
entry(enter_where));¶
enter_tag=d->tag;¶
enter_time=d->when;¶
dbox_setfield(enter_box,entf_ms,d->mes
sage);¶
dbox_unfadefield(enter_box,entf_lst);¶
dbox_unfadefield(enter_box,entf_nxt);¶
win_settitle(dbox_syshandle(enter_box)
,"Edit entry");¶
}¶
}¶
¶
static void open_entry()¶
{fill_in_entry() ;¶
dbox_showstatic(enter_box);¶
refresh_entry();¶
}¶
¶
static void skip_entry(int skip)¶
{if (timely_entry(enter_where+skip)!=-1
) {enter_where+=skip ;¶
fill_in_entry();¶
refresh_entry();¶
}¶
}¶
¶
static void timely_update_viewers()¶
{void timely_new(period,time_t,BOOL);¶
int i;¶
for (i=0;i<timely_maxwindows;i++) {if
(viewer[i].hand!=0)¶
timely_new(viewer[i].type,viewer[i].st
art,FALSE);¶
}¶
}¶
¶
static void delete_current_entry(BOOL
update)¶
{int offset=timely_entry(enter_where);¶
diary_entry *d;¶
if (offset!=-1) {d=(diary_entry*)
(diary.anchor+offset)
;¶
memory_midextend(&diary,offset,-(d->si
ze));¶
if (update) timely_update_viewers();¶
}¶
}¶
¶
static int timely_steps(period type,ti
me_t start)¶
{double steps;¶
struct tm *l=localtime(&start);¶
switch(type) {case year:¶
l->tm_year++;¶
steps=difftime(mktime(l),start)/(60*60
*24);¶
break;¶
case month:¶
l->tm_mon++;¶
steps=difftime(mktime(l),start)/(60*60
*24);¶
break;¶
case week:¶
steps=7;¶
break;¶
case day:¶
steps=1;¶
break;¶
}¶
return((int) steps);¶
}¶
¶
static void timely_next(period type,st
ruct tm *l)¶
{if (type==day) l->tm_hour++;¶
else l->tm_mday++;¶
}¶
¶
static void timely_get_xyc(int *x,int
*y,draw_coltyp *c,struct tm *l,period ty
pe)¶
{int temp;¶
time_t t=mktime(l);¶
switch(type) {case year:¶
*x=l->tm_mon;¶
l->tm_mday=1;¶
mktime(l);¶
*y=l->tm_wday;¶
l=localtime(&t);¶
*y+=l->tm_mday-1;¶
*c=(l->tm_wday % 6==0)?lightgrey:white
;¶
break;¶
case month:¶
temp=l->tm_mday-1+(l->tm_wday+36-l->tm
_mday) % 7;¶
*x=temp / 7;¶
*y=temp % 7;¶
*c=white;¶
break;¶
case week:¶
*x=0;¶
*y=l->tm_wday;¶
*c=white;¶
break;¶
case day:¶
*x=0;¶
*y=l->tm_hour;¶
*c=white;¶
break;¶
default:¶
break;¶
}¶
}¶
¶
static int timely_x(double x,period ty
pe)¶
{return((int)(lbord+style[type].cellw*x
));¶
}¶
¶
static int timely_y(double y,period ty
pe)¶
{return((int)(-tbord-style[type].cellh*
y));¶
}¶
¶
static void check_diag(draw_diag *diag
)¶
{draw_error dr_err;¶
if (!draw_verify_diag(diag,&dr_err))¶
werr(0,"Bad diagram");¶
}¶
¶
static void timely_main_redraw(int i,w
imp_redrawstr *r,BOOL *more)¶
{draw_error dr_err;¶
while (*more) {visdelay_begin() ;¶
if (!draw_render_diag((draw_diag*) &vi
ewer[i].diag,(draw_redrawstr*) r,1,&dr_e
rr))¶
werr(1,"couldn't render");¶
visdelay_end();¶
wimpt_noerr(wimp_get_rectangle(r,more)
);¶
}¶
}¶
¶
static void timely_redraw_window(int i
)¶
{bool more;¶
wimp_redrawstr r;¶
r.w=viewer[i].hand;¶
```

```
wimpt_noerr(wimp_redraw_wind(&r,&more)
);¶
timely_main_redraw(i,&r,&more);¶
}¶
¶
static BOOL tml_saveproc(char *filenam
e,void *handle)¶
{bool ok,done=FALSE;¶
os_filestr file;¶
FILE *f;¶
int i=(int) handle;¶
diary_entry *d;¶
struct tm *l;¶
if (strlen(filename) > timely_max_name
_len) {werr(0 ,"Filename is too long");¶
return(FALSE);¶
}¶
switch (save_mode) {case save_as_draw:¶
file.loadaddr=draw_file_type;¶
file.start=(int)viewer[i].diag.anchor;¶
file.end=file.start+viewer[i].diag.use
d;¶
file.action=0x0a;¶
file.name=filename;¶
ok=(wimpt_complain(os_file(&file))==0)
;¶
break;¶
case save_whole:¶
f=fopen(filename,"w");¶
if (f==0)¶
ok=FALSE;¶
else {fprintf(f ,"%s\n",creator);¶
i=0;¶
do {d=(diary_entry*) (diary.anchor+i);¶
if (d->size==0)¶
done=TRUE;¶
else {l=localtime(&d->when) ;¶
strftime(temp_string,256,"%d %b %y",l)
;¶
fprintf(f,"%d %d %d %d (%s)\n%s\n\n",l
->tm_year,l->tm_mon,l->tm_mday,d->tag,te
mp_string,d->message);¶
i+=d->size;¶
}¶
} while (!done);¶
fclose(f);¶
ok=TRUE;¶
}¶
break;¶
default:¶
break;¶
}¶
return(ok);¶
}¶
¶
static void timely_click(wimp_mousestr
 *inf,int i)¶
{void timely_new(period,time_t,BOOL);¶
int mx,my,clickx,clicky,steps,cell,x,y
,c,offset;¶
struct tm *l;¶
BOOL found=FALSE,done=FALSE;¶
period pr,type=viewer[i].type;¶
wimp_wstate r;¶
diary_entry *d;¶
if ((inf->bbits & (wimp_BLEFT | wimp_B
RIGHT))!=0) {wimp_get_wind_state(inf->w
,&r);¶
mx=coords_x_toworkarea(inf->x,(coords_
cvtstr*) &r.o.box)-lbord-draw_bord;¶
my=viewer[i].sizey-coords_y_toworkarea
(inf->y,(coords_cvtstr*) &r.o.box)-tbord
+draw_bord;¶
clickx=mx/style[type].cellw;¶
clicky=my/style[type].cellh;¶
steps=timely_steps(type,viewer[i].star
t);¶
l=localtime(&viewer[i].start);¶
for (cell=0;cell<steps && !found;cell+
+) {timely_get_xyc(&x ,&y,&c,l,type);¶
if (x==clickx && y==clicky && mx>=0 &&
 my>=0) {pr=style[type].cellperiod ;¶
found=TRUE;¶
}¶
if (x==clickx && my<0 && !found)
{pr=style[type].xperiod ;¶
found=TRUE;¶
}¶
if (mx<0 && y==clicky && !found)
{pr=style[type].yperiod ;¶
found=TRUE;¶
}¶
if (found) {if (viewer[i].type==day)
{enter_time=mktime(l) ;¶
if ((inf->bbits & wimp_BLEFT)!=0) ente
r_new=TRUE;¶
else {enter_where=0 ;¶
offset=0;¶
do {d=(diary_entry*)
(diary.anchor+offset)
;¶
if (d->size==0) done=TRUE;¶
else {if (d->when==enter_time)
done=TRUE;¶
else {set+=d->size ;¶
enter_where++;¶
}¶
}¶
} while (!done);¶
enter_new=(d->size==0);¶
}¶
open_entry();¶
}¶
else {if ((inf->bbits & wimp_BRIGHT)!=0)
tim
ely_close_viewer(i);¶
timely_new(pr,mktime(l),TRUE);¶
}¶
}¶
timely_next(type,l);¶
}¶
}¶
}¶
¶
static void timely_add_appointment(tim
e_t t,char *m,int k,BOOL update)¶
{diary_entry *d;¶
int i=0,req=(sizeof(diary_entry_hdr)+s
trlen(m)+4) & (~3);¶
BOOL found=FALSE;¶
do {d=(diary_entry*) (diary.anchor+i);¶
if (d->size==0)¶
found=TRUE;¶
else {found=(difftime(t ,d->when)<=0);¶
if (!found)¶
i+=d->size;¶
}¶
} while (!found);¶
memory_midextend(&diary,i,req);¶
d=(diary_entry*) (diary.anchor+i);¶
d->size=req;¶
d->when=t;¶
d->tag=k;¶
strcpy(d->message,m);¶
diary.used+=req;¶
if (update) timely_update_viewers();¶
}¶
¶
static BOOL enter_event_handler(dbox d
,void *ev,void *handle)¶
{wimp_eventstr *e=(wimp_eventstr*) ev;¶
dbox_field field;¶
handle=handle;¶
switch (e->e) {case wimp_ECLOSE:¶
dbox_hide(d);¶
return(TRUE);¶
case wimp_EBUT:¶
field=e->data.but.m.i;¶
switch (field) {case entf_ok:¶
dbox_getfield(d,entf_ms,temp_string,25
6);¶
dbox_hide(d);¶
if (!enter_new) delete_current_entry(F
ALSE);¶
timely_add_appointment(enter_time,temp
_string,enter_tag,TRUE);¶
break;¶
case entf_cnc:¶
dbox_hide(d);¶
break;¶
case entf_lst:¶
skip_entry(-1);¶
break;¶
case entf_nxt:¶
skip_entry(1);¶
break;¶
case entf_del:¶
dbox_hide(d);¶
delete_current_entry(TRUE);¶
break;¶
default:¶
if (field>=entf_set) {enter_tag=(field-
entf_set)/3 ;¶
refresh_entry();¶
}¶
}¶
return(TRUE);¶
}¶
return(FALSE);¶
}¶
¶
static void timely_clear()¶
{ensure_memory(&diary ,4);¶
((diary_entry*) diary.anchor)->size=0;¶
diary.used=4;¶
}¶
¶
static void timely_main_load(int filet
ype,char *filename)¶
{int ld[9],k;¶
BOOL load_ok=FALSE;¶
FILE *f;¶
if (strlen(filename)>timely_max_name_l
en)¶
werr(FALSE,"File name is too long");¶
else {if (filetype==text_file_type)
{strcpy(temp_string ,filename);¶
f=fopen(filename,"r");¶
if (f!=0) {fscanf(f
,"%s\n",temp_string);¶
if (strcmp(temp_string,creator)==0)
{timely_clear() ;¶
visdelay_begin();¶
while (!feof(f)) {fscanf(f ,"%d %d %d %d
%[^\n]\n",&ld[5]
,&ld[4],&ld[3],&k,temp_string);¶
fscanf(f,"%[^\n]\n\n",temp_string);¶
ld[0]=0;¶
ld[1]=0;¶
ld[2]=0;¶
timely_add_appointment(mktime((struct
tm*) ld),temp_string,k,FALSE);¶
}¶
visdelay_end();¶
timely_update_viewers();¶
}¶
fclose(f);¶
}¶
}¶
}¶
if (load_ok) {strcpy(savetext
,filename);¶
xferrecv_insertfileok();¶
}¶
}¶
¶
static void timely_loadproc()¶
{char *filename;¶
int filetype=xferrecv_checkinsert(&fil
ename);¶
timely_main_load(filetype,filename);¶
}¶
¶
static void viewer_event_handler(wimp_
eventstr *e,void *handle)¶
{int i=(int) handle;¶
switch (e->e) {case wimp_EREDRAW:¶
timely_redraw_window(i);¶
break;¶
case wimp_EOPEN:¶
wimp_utils_open_window(&e->data.o);¶
break;¶
case wimp_ECLOSE:¶
timely_close_viewer(i);¶
break;¶
case wimp_EBUT:¶
timely_click(&e->data.but.m,i);¶
break;¶
case wimp_ESEND:¶
case wimp_ESENDWANTACK:¶
switch(e->data.msg.hdr.action) {case
wimp_MDATALOAD:¶
case wimp_MDATAOPEN:¶
timely_loadproc();¶
break;¶
default:¶
break;¶
}¶
default:¶
break;¶
}¶
}¶
¶
static menu tml_menumaker(void *handle
)¶
{int i=(int) handle;¶
menu m1,m2;¶
if (!event_is_menu_being_recreated())
{strcpy(temp_string ,">Whole diary,");¶
strcat(temp_string,viewer[i].name);¶
m1=menu_new("Save",temp_string);¶
m2=menu_new(viewer[i].save,">Save as D
rawfile,~>Save as text");¶
tml_cmenu=menu_new(viewer[i].save,"Sav
e");¶
menu_submenu(m1,2,m2);¶
menu_submenu(tml_cmenu,1,m1);¶
}¶
return(tml_cmenu);¶
}¶
¶
static void tml_menu_proc(void *handle
,char *hit)¶
{int i=(int) handle;¶
switch (hit[0]) {case 1:¶
switch (hit[1]) {case 1:¶
save_mode=save_whole;¶
saveas(text_file_type,savetext,0,tml_s
aveproc,0,0,(void*) i);¶
break;¶
case 2:¶
save_mode=save_as_draw;¶
saveas(draw_file_type,viewer[i].save,v
iewer[i].diag.used,tml_saveproc,0,0,(voi
d*) i);¶
break;¶
default:¶
break;¶
}¶
default:¶
break;¶
}¶
}¶
¶
static BOOL valid_cell(int x,int y)¶
{if (x<0 || x>=maxcol || y<0 || y>=maxr
ow) return (FALSE);¶
return(ct[x][y]!=(time_t)-1);¶
}¶
¶
void wimp_utils_forceredraw(int i)¶
{wimp_wstate wst;¶
if (winfo[i].is_open)
{wimp_get_wind_state(winfo[i].hand ,&wst
);¶
wimp_close_wind(winfo[i].hand);¶
wimp_open_wind(&wst.o);¶
}¶
}¶
¶
static void timely_insert_detail(char
*ent,int *cx,int *cy,int ex0,int ey0,int
 ex1,int ey1,draw_coltyp fore,draw_colty
p back,int fh,period type,memory_block *
m)¶
{int splitchar=' ';¶
font_string entry_string;¶
char tempc;¶
draw_object dummy;¶
while (*cy>=ey0 && ent[0]>' ')
{entry_string.s=ent ;¶
entry_string.x=screen_to_mpts(ex1-*cx)
;¶
entry_string.y=1000000;¶
entry_string.split=splitchar;¶
entry_string.term=strlen(ent);¶
wimpt_noerr(font_strwidth(&entry_strin
g));¶
if (entry_string.term>0) {splitchar='
';¶
tempc=ent[entry_string.term];¶
ent[entry_string.term]=0;¶
add_text_box(ent,draw_screenToDraw(*cx
),draw_screenToDraw(*cy),draw_screenToDr
aw(ex1-*cx),draw_screenToDraw(*cy+fh),dr
aw_ljust,draw_tjust,&style[type].font[3]
,fore,back,&dummy,m);¶
if (entry_string.split>0 && ent[entry_
string.term]>0) {*cy-=fh ;¶
*cx=ex0;¶
}¶
else *cx+=mpts_to_screen(entry_string.
x);¶
ent[entry_string.term]=tempc;¶
ent=&ent[entry_string.term];¶
while (ent[0]==' ') ent++;¶
}¶
else {if (*cx>ex0) {*cy-=fh ;¶
*cx=ex0;¶
}¶
else splitchar=-1;¶
}¶
}¶
}¶
¶
static void timely_new(period type,tim
e_t start,BOOL tofront)¶
{char temp[256];¶
int new=0,steps,cell,i,x,y,pass,ex0,ey
0,ex1,ey1,cx,cy;¶
int row0=INT_MAX,row1=INT_MIN,col0=INT
_MAX,col1=INT_MIN;¶
draw_coltyp colour;¶
draw_box bx;¶
struct tm *l;¶
draw_object dummy;¶
wimp_wind *window;¶
BOOL exists=FALSE,found;¶
diary_entry *d;¶
font_info entry_font;¶
wimp_palettestr pal;¶
wimp_readpalette(&pal);¶
if (type==never || type==hour) return;¶
while (new<timely_maxwindows && !exist
s) {if (viewer[new].hand!=0 &&
viewer[new]
.type==type && viewer[new].start==start)
 exists=TRUE;¶
else new++;¶
}¶
if (!exists)
{window=template_syshandle("timely") ;¶
new=0;¶
while (new<timely_maxwindows && viewer
[new].hand!=0) new++;¶
if (new==timely_maxwindows) {werr(0
,"Too many viewers");¶
return;¶
}¶
}¶
for (x=0;x<maxcol;x++)¶
for (y=0;y<maxrow;y++)¶
ct[x][y]=(time_t)-1;¶
strftime(viewer[new].name,40,style[typ
e].name,localtime(&start));¶
strftime(viewer[new].save,12,style[typ
e].save,localtime(&start));¶
viewer[new].start=start;¶
ensure_memory(&viewer[new].diag,1024);¶
font_readinfo(style[type].font[3].hand
le,&entry_font);¶
for (pass=0;pass<2;pass++) {if (pass==1)
{draw_create_diag((draw_diag*) &viewer[
new].diag,creator,bx);¶
draw_utils_begin_font_list();¶
for (x=0;x<4;x++)¶
add_font_to_list(&style[type].font[x])
;¶
add_draw_object(&viewer[new].diag,&dum
my,draw_FirstObject,TRUE);¶
}¶
steps=timely_steps(type,start);¶
l=localtime(&start);¶
i=0;¶
for (cell=0;cell<steps;cell++)
{timely_get_xyc(&x ,&y,&colour,l,type);¶
ct[x][y]=mktime(l);¶
row0=min(row0,y);¶
row1=max(row1,y);¶
col0=min(col0,x);¶
col1=max(col1,x);¶
if (pass==1) {found=false ;¶
ex0=timely_x(x,type);¶
if (style[type].clab[0]>=' ') {font
_setfont(style[type].font[2].handl
e);¶
ex0+=48; /* calculate this! */¶
}¶
ex1=timely_x((double) x+1,type);¶
ey0=timely_y((double) y+1,type);¶
ey1=timely_y(y,type);¶
cx=ex0;¶
cy=ey1-(entry_font.maxy-entry_font.min
y);¶
font_setfont(style[type].font[3].handl
e);¶
do {d=(diary_entry*) (diary.anchor+i);¶
if (d->size==0) found=TRUE;¶
else {if (difftime(d->when,ct[x][y])>=0)
{if (difftime(d->when,ct[x][y])==0) {int
*pp=(int *) &pal.c[8+d->tag].bytes
;¶
d=(diary_entry*) (diary.anchor+i);¶
if (type==day && cx>ex0) {cy-
=entry_font.maxy-entry_font.miny ;¶
cx=ex0;¶
}¶
timely_insert_detail("* ",&cx,&cy,ex0,
ey0,ex1,ey1,*pp,colour,entry_font.maxy-e
ntry_font.miny,type,&viewer[new].diag);¶
if (type==day || type==week)¶
timely_insert_detail(d->message,&cx,&c
y,ex0,ey0,ex1,ey1,black,colour,entry_fon
t.maxy-entry_font.miny,type,&viewer[new]
.diag);¶
```

```
i+=((diary_entry*) (diary.anchor+i))->
size;¶
}¶
else found=TRUE;¶
}¶
else i+=d->size;¶
}¶
} while (!found);¶
if (style[type].clab[0]>=' ')
{strftime(temp ,32,style[type].clab,1);¶
add_text_box(temp,draw_screenToDraw(ti
mely_x(x,type)),draw_screenToDraw(timely
_y((double) y+0.25,type)),draw_screenToD
raw(timely_x((double) x+1,type)),draw_sc
reenToDraw(timely_y(y,type)),draw_ljust,
draw_tjust,&style[type].font[2],black,co
lour,&dummy,&viewer[new].diag);¶
}¶
}¶
timely_next(type,1);¶
}¶
viewer[new].sizex=lbord+rbord+style[ty
pe].cellw*(col1-col0+1);¶
viewer[new].sizey=tbord+bbord+style[ty
pe].cellh*(row1-row0+1);¶
bx.x0=0;¶
bx.y1=0;¶
bx.y0=-draw_screenToDraw(viewer[new].s
izey);¶
bx.x1=draw_screenToDraw(viewer[new].si
zex);¶
}¶
begin_path_obj(0x42,0x10,0x20,black);¶
for (y=0;y<maxrow;y++) {x=0 ;¶
while (x<=maxcol) {while (x<=maxcol &&
!valid_cell(x,y) &
& !valid_cell(x,y-1)) x++;¶
if (x<=maxcol)
{add_move_to_path_obj(timely_x(x ,type),
timely_y(y,type));¶
while (valid_cell(x,y) || valid_cell(x
,y-1)) x++;¶
add_line_to_path_obj(timely_x(x,type),
timely_y(y,type));¶
}¶
}¶
}¶
for (x=0;x<maxcol;x++) {y=0 ;¶
while (y<=maxrow) {while (y<=maxrow &&
!valid_cell(x,y) &
& !valid_cell(x-1,y)) y++;¶
if (y<=maxrow)
{add_move_to_path_obj(timely_x(x ,type),
timely_y(y,type));¶
while (valid_cell(x,y) || valid_cell(x
-1,y)) y++;¶
add_line_to_path_obj(timely_x(x,type),
timely_y(y,type));¶
}¶
}¶
}¶
end_path_obj();¶
add_draw_object(&viewer[new].diag,&dum
my,draw_LastObject,TRUE);¶
for (y=row0;y<=row1;y++) {x=col0 ;¶
while (ct[x][y]==(time_t)-1) x++;¶
strftime(temp,32,style[type].ylab,loca
ltime(&ct[x][y]));¶
add_text_box(temp,0,draw_screenToDraw(
-64-style[type].cellh*(y+1)),draw_screen
ToDraw(lbord*7/8),draw_screenToDraw(-64-
style[type].cellh*y),draw_rjust,draw_mid
dle,&style[type].font[1],black,white,&du
mmy,&viewer[new].diag);¶
}¶
for (x=col0;x<=col1;x++) {y=row0 ;¶
while (ct[x][y]==(time_t)-1) y++;¶
strftime(temp,32,style[type].xlab,loca
ltime(&ct[x][y]));¶
add_text_box(temp,draw_screenToDraw(lb
ord+style[type].cellw*x),draw_screenToDr
aw(-tbord*3/4),draw_screenToDraw(lbord+s
tyle[type].cellw*(x+1)),0,draw_centre,dr
aw_bjust,&style[type].font[0],black,whit
e,&dummy,&viewer[new].diag);¶
}¶
draw_shift_diag((draw_diag*) &viewer[n
ew].diag,draw_screenToDraw(draw_bord),dr
aw_screenToDraw(draw_bord+viewer[new].si
zey));¶
check_diag((draw_diag*) &viewer[new].d
iag);¶
if (!exists) {window->titleflags=window-
>titleflags | wimp_INDIRECT;¶
window->title.indirecttext.buffer=view
er[new].name;¶
window->title.indirecttext.validstring
=0;¶
window->title.indirecttext.bufflen=20;¶
window->ex.x0=draw_bord;¶
window->ex.y1=draw_bord+tbord+bbord+st
yle[type].cellh*(row1-row0+1);¶
window->ex.x1=draw_bord+lbord+rbord+st
yle[type].cellw*(col1-col0+1);¶
window->ex.y0=draw_bord;¶
window->box=window->ex;¶
window->scx=0;¶
window->scy=0;¶
viewer[new].ref=wimp_utils_create_wind
ow("Timely",new,TRUE);¶
viewer[new].hand=winfo[viewer[new].ref
].hand;¶
viewer[new].type=type;¶
win_register_event_handler(viewer[new]
.hand,viewer_event_handler,(void*)new);¶
event_attachmenumaker(viewer[new].hand
,tml_menumaker,tml_menu_proc,(void*)new)
;¶
}¶
if (tofront)¶
wimp_utils_front(viewer[new].ref,in_ce
ntre,0,0);¶
else¶
wimp_utils_forceredraw(viewer[new].ref
);¶
}¶
¶
static time_t year_start(time_t t)¶
{struct tm *l;¶
l=localtime(&t);¶
l->tm_sec=0;¶
l->tm_min=0;¶
l->tm_hour=0;¶
l->tm_mday=1;¶
l->tm_mon=0;¶
return(mktime(l));¶
}¶
¶
static void timely_iconclick(wimp_i ic
on)¶
{time_t t;¶
icon=icon;¶
timely_new(year,year_start(time(&t)),T
RUE);¶
}¶
¶
static void timely_info_about_program(
void)¶
{dbox d;¶
if (d=dbox_new("ProgInfo"),d!=NULL)
{dbox_setfield(d ,timely_info_field,time
ly_version_string);¶
dbox_show(d);¶
dbox_fillin(d);¶
dbox_dispose(&d);¶
}¶
}¶
¶
static void tml_qmenu_proc(void *handl
e,char *hit)¶
{handle=handle ;¶
switch (hit[0]) {case tml_qmenu_info:¶
timely_info_about_program();¶
break;¶
case tml_qmenu_quit:¶
exit(0);¶
}¶
}¶
¶
static void timely_init()¶
{file *in;¶
int i,j;¶
double a,b;¶
for (i=0;i<timely_maxwindows;i++)
{init_memory_block(&viewer[i].diag ,0x10
0,TRUE);¶
viewer[i].hand=0;¶
}¶
in=res_openfile("!config","r");¶
for (i=0;i<=3;i++) {fscanf(in ,"%d %d %d
%d %d\n%[^,],%[^,]
,%[^,],%[^,],%[^\n]\n",&style[i].cellw,&
style[i].cellh,&style[i].cellperiod,&sty
le[i].xperiod,&style[i].yperiod,style[i]
.name,style[i].ylab,style[i].xlab,style[
i].clab,style[i].save);¶
for (j=0;j<4;j++) {fscanf(in ,"%s %lf
%lf\n",temp_string,&
a,&b);¶
font_utils_declarefont(&style[i].font[
j],temp_string,a,b);¶
}¶
}¶
for (i=0;i<8;i++) {fscanf(in
,"%s\n",temp_string);¶
dbox_setfield(enter_box,entf_set+2+3*i
,temp_string);¶
}¶
fclose(in);¶
init_memory_block(&diary,256,FALSE);¶
timely_clear();¶
}¶
static BOOL timely_initialise(void)¶
{wimpt_init("timely") ;¶
res_init("Timely");¶
resspr_init();¶
flex_init();¶
template_init();¶
dbox_init();¶
visdelay_init();¶
drawfobj_init();¶
drawfdiag_init();¶
draw_transTable=ftrans;¶
draw_utils_init();¶
wimp_utils_init();¶
font_utils_init();¶
enter_box=dbox_new("Enter");¶
dbox_raw_eventhandler(enter_box,enter_
event_handler,(void*) id_enter);¶
timely_init();¶
if (tml_qmenu=menu_new("Timely",">Info
,Quit"),tml_qmenu==NULL)¶
return(FALSE);¶
baricon("!timely",(int)resspr_area(),t
imely_iconclick);¶
win_register_event_handler(win_ICONBAR
LOAD,viewer_event_handler,(void*)-1);¶
if (!event_attachmenu(win_ICONBAR,tml_
qmenu,tml_qmenu_proc,0))¶
return(FALSE);¶
return(TRUE);¶
}¶
int main(int argc,char *argv[])¶
{if (timely_initialise())
{timely_main_load(text_file_type ,"<Time
ly$Dir>.Diary");¶
while (TRUE)¶
event_process();¶
}¶
return(0);¶
}¶
¶
```

C Listing 2

```
set makedir <obey$dir>¶
set userclib &.UserCLib¶
amu -f<makedir>.makefile¶
```

C Listing 3

```
# > MakeFile¶
CC = cc¶
CFLAGS =-c -I$.Risc_OSLib -I$.UserCLib¶
¶
<makedir>.!RunImage: <makedir>.o.Timel
y \¶
<userclib>.o.UserLib \¶
<userclib>.o.Memory \¶
<userclib>.o.FontUtils \¶
<userclib>.o.DrawUtils \¶
<userclib>.o.WimpUtils¶
link -o <makedir>.!RunImage \¶
<makedir>.o.Timely \¶
<userclib>.o.UserLib \¶
<userclib>.o.Memory \¶
<userclib>.o.FontUtils \¶
<userclib>.o.DrawUtils \¶
<userclib>.o.WimpUtils \¶
$.Risc_OSLib.o.Risc_OSLib $.Clib.o.Stu
bs¶
# squeeze <makedir>.!RunImage¶
count <makedir>.!RunImage¶
¶
<makedir>.o.Timely: <makedir>.c.Timely¶
$(CC) $(CFLAGS) <makedir>.c.Timely -o
<makedir>.o.Timely¶
¶
<userclib>.o.UserLib: <userclib>.c.Use
rLib¶
$(CC) $(CFLAGS) <userclib>.c.UserLib -
o <userclib>.o.UserLib¶
¶
<userclib>.o.Memory: <userclib>.c.Memo
ry¶
$(CC) $(CFLAGS) <userclib>.c.Memory -o
 <userclib>.o.Memory¶
¶
<userclib>.o.FontUtils: <userclib>.c.F
ontUtils¶
$(CC) $(CFLAGS) <userclib>.c.FontUtils
 -o <userclib>.o.FontUtils¶
¶
<userclib>.o.DrawUtils: <userclib>.c.D
rawUtils¶
$(CC) $(CFLAGS) <userclib>.c.DrawUtils
 -o <userclib>.o.DrawUtils¶
¶
<userclib>.o.WimpUtils: <userclib>.c.W
impUtils¶
$(CC) $(CFLAGS) <userclib>.c.WimpUtils
 -o <userclib>.o.WimpUtils¶
¶
```

C Listing 4

```
/* Title:   >c.drawutils¶
*¶
* Purpose: Misc drawfile utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#include "memory.h"¶
#include "fontutils.h"¶
#include "font.h"¶
#include "drawfobj.h"¶
#include "drawftypes.h"¶
#include "flex.h"¶
#include "werr.h"¶
#include "macros.h"¶
#include <stdlib.h>¶
#include <string.h>¶
#include <stdio.h>¶
#include <limits.h>¶
¶
#define draw_utils_extend 1024¶
#define black 0x00000000¶
#define white 0xffffff00¶
#define darkgrey 0x50505000¶
#define lightgrey 0xdddddd00¶
#define transp -1¶
#define draw_utils_leeway draw_screenT
oDraw(4)¶
¶
memory_block draw_utils_obj;¶
¶
int draw_utils_fontno;¶
¶
typedef enum {draw_ljust ,draw_centre,d
raw_rjust} draw_hjustify;¶
typedef enum {draw_bjust ,draw_middle,d
raw_tjust} draw_vjustify;¶
¶
typedef struct {draw_fontref fontref;¶
char          fontname[1];¶
} fontlist_entry;¶
¶
typedef struct {draw_pathstrhdr hdr;¶
int data[64];¶
} path_obj;¶
¶
void draw_utils_init()¶
{draw_registermemoryfunctions(flex_allo
c,flex_extend,flex_free);¶
init_memory_block(&draw_utils_obj,0x10
0,TRUE);¶
}¶
¶
void add_draw_object(memory_block *m,d
raw_object *o,draw_object where,BOOL ver
ify)¶
{draw_error dr_err;¶
draw_objectType s;¶
int objsize;¶
char *c=draw_utils_obj.anchor+draw_uti
ls_obj.used;¶
while ((draw_utils_obj.used & 3) !=0)
{draw_utils_obj.used++ ;¶
*(c++)=0;¶
}¶
ensure_extra_memory(m,draw_utils_obj.u
sed);¶
s.bytep=draw_utils_obj.anchor;¶
((draw_pathstr*) draw_utils_obj.anchor
)->size=draw_utils_obj.used;¶
if (!draw_createObject((draw_diag*) m,
s,where,TRUE,o,&dr_err))¶
werr(0,"Couldn't create object");¶
if (verify) {if
(!draw_verifyObject((draw_diag*) m,
*o,&objsize,&dr_err))¶
werr(0,"Bad object");¶
}¶
}¶
¶
void draw_utils_begin_font_list()¶
{draw_fontliststr *fl;¶
ensure_memory(&draw_utils_obj,sizeof(d
raw_fontliststrhdr));¶
draw_utils_obj.used=sizeof(draw_fontli
ststrhdr);¶
fl=(draw_fontliststr*) draw_utils_obj.
anchor;¶
fl->tag=draw_OBJFONTLIST;¶
draw_utils_fontno=1;¶
}¶
¶
void add_font_to_list(font_desc *f)¶
{font list_entry *e;¶
int l=strlen(f->name)+1+sizeof(draw_fo
ntref);¶
ensure_extra_memory(&draw_utils_obj,l)
;¶
e=(fontlist_entry*) (draw_utils_obj.an
chor+draw_utils_obj.used);¶
e->fontref=draw_utils_fontno;¶
f->no=draw_utils_fontno;¶
strcpy(e->fontname,f->name);¶
draw_utils_obj.used+=l;¶
draw_utils_fontno++;¶
}¶
¶
void begin_path_obj(unsigned char join
capwind,¶
unsigned char tricapwid,unsigned char
tricaphei,¶
draw_coltyp fillcol)¶
{path_obj *d;¶
ensure_memory(&draw_utils_obj,256);¶
draw_utils_obj.used=sizeof(draw_pathst
rhdr);¶
d=(path_obj*) draw_utils_obj.anchor;¶
d->hdr.tag=draw_OBJPATH;¶
d->hdr.size=0; /* no. of words of data
 (will become size) */¶
d->hdr.fillcolour=fillcol;¶
d->hdr.pathcolour=black;¶
d->hdr.pathwidth=0;¶
d->hdr.pathstyle.joincapwind=joincapwi
nd;¶
d->hdr.pathstyle.reserved8=0;¶
d->hdr.pathstyle.tricapwid=tricapwid;¶
d->hdr.pathstyle.tricaphei=tricaphei;¶
d->hdr.bbox.x0=INT_MAX;¶
d->hdr.bbox.x1=INT_MIN;¶
d->hdr.bbox.y0=INT_MAX;¶
d->hdr.bbox.y1=INT_MIN;¶
}¶
¶
void add_obj(int x,int y,draw_path_tag
type t)¶
{path_obj *d;¶
int p;¶
ensure_extra_memory(&draw_utils_obj,3*
sizeof(int));¶
draw_utils_obj.used+=3*sizeof(int);¶
d=(path_obj*) draw_utils_obj.anchor;¶
p=d->hdr.size;¶
x=draw_screenToDraw(x);¶
y=draw_screenToDraw(y);¶
d->data[p++]=t;¶
d->data[p++]=x;¶
d->data[p++]=y;¶
d->hdr.size=p;¶
}¶
¶
void add_move_to_path_obj(int x,int y)¶
{add_obj(x ,y,draw_PathMOVE);¶
}¶
¶
void add_line_to_path_obj(int x,int y)¶
{add_obj(x ,y,draw_PathLINE);¶
}¶
¶
void end_path_obj()¶
{path_obj *d;¶
int p;¶
ensure_extra_memory(&draw_utils_obj,2*
sizeof(int));¶
d=(path_obj*) draw_utils_obj.anchor;¶
draw_utils_obj.used+=2*sizeof(int);¶
p=d->hdr.size;¶
d->data[p++]=draw_PathCLOSE;¶
```

```
d->data[p++]=draw_PathTERM;¶
}¶
¶
void add_text_box(char *text,int x0,in
t y0,int x1,int y1,¶
draw_hjustify hjust,draw_vjustify vjus
t,¶
font_desc *f,draw_coltyp textcol,draw_
coltyp backcol,¶
draw_object *o,memory_block *m)¶
{draw_textstr *d;¶
font_info fi;¶
ensure_memory(&draw_utils_obj,256);¶
d=(draw_textstr*) draw_utils_obj.ancho
r;¶
if (text==0)¶
d->text[0]=0;¶
else¶
strcpy(d->text,text);¶
font_setfont(f->handle);¶
font_stringbbox(d->text,&fi);¶
fi.minx=mpts_to_draw(fi.minx);¶
fi.maxx=mpts_to_draw(fi.maxx);¶
fi.miny=mpts_to_draw(fi.miny);¶
fi.maxy=mpts_to_draw(fi.maxy);¶
d->tag=draw_OBJTEXT;¶
d->textcolour=textcol;¶
d->background=backcol;¶
d->textstyle.fontref=f->no;¶
d->textstyle.reserved8=0;¶
d->textstyle.reserved16=0;¶
d->fsizex=(int) pts_to_draw(f->xpt);¶
d->fsizey=(int) pts_to_draw(f->ypt);¶
switch (vjust) {case draw_bjust:¶
d->coord.y=y0-fi.minx;¶
break;¶
case draw_middle:¶
d->coord.y=(y0+y1-fi.maxy)>>1;¶
break;¶
case draw_tjust:¶
d->coord.y=y1-fi.maxy;¶
break;¶
}¶
switch (hjust) {case draw_ljust:¶
d->coord.x=x0-fi.minx;¶
break;¶
case draw_centre:¶
d->coord.x=(x0+x1-fi.maxx)>>1;¶
break;¶
case draw_rjust:¶
d->coord.x=x1-fi.maxx;¶
break;¶
}¶
d->bbox.x0=d->coord.x+fi.minx-draw_uti
ls_leeway;¶
d->bbox.x1=d->coord.x+fi.maxx+draw_uti
ls_leeway;¶
d->bbox.y0=d->coord.y+fi.miny-draw_uti
ls_leeway;¶
d->bbox.y1=d->coord.y+fi.maxy+draw_uti
ls_leeway;¶
draw_utils_obj.used=(int)(d->text)+str
len(d->text)-(int)d+1;¶
add_draw_object(m,o,draw_LastObject,FA
LSE);¶
}¶
```

C Listing 5

```
/* Title:   >c.fontutils¶
*¶
* Purpose: Misc font utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#include "flex.h"¶
#include "werr.h"¶
#include "font.h"¶
#include "fontlist.h"¶
#include "drawftypes.h"¶
#include "menu.h"¶
#include "wimp.h"¶
#include "visdelay.h"¶
#include "macros.h"¶
#include "userlib.h"¶
#include <stdlib.h>¶
#include <string.h>¶
#include <stdio.h>¶
¶
typedef struct {char name[48];¶
font handle;¶
draw_fontref no;¶
int id;¶
double xpt,ypt;¶
char user_size[8];¶
char user_height[8];¶
} font_desc;¶
¶
flex_ptr font_utils_names=0;¶
char font_utils_prefix[256]="",font_ut
ils_work[256];¶
int font_utils_fontsizes[5]={8 ,10,12,1
4,20};¶
fontlist_node *font_root=0;¶
¶
void font_utils_verifyfont(font_desc *
d)¶
{int i=1,was=0,match_level=0;¶
char pref[256],temp[256],*p=*font_util
s_names,*tail;¶
strcpy(pref,d->name);¶
tail=strchr(pref,'.');¶
while (*p!=0 && match_level<5) {if
(userlib_strcmp(pref,p))¶
match_level=5;¶
if (tail!=0) {if (match_level<4)
{sprintf(temp ,"Trinity%s",tail);¶
if (userlib_strcmp(temp,p))¶
match_level=4;¶
}¶
if (match_level<3) {sprintf(temp
,"*%s",tail);¶
if (userlib_strcmp(temp,p))¶
match_level=3;¶
}¶
}¶
if (match_level<2) {if
(userlib_strcmp("Trinity*",p))¶
match_level=2;¶
}¶
if (match_level<1)¶
match_level=1;¶
if (match_level !=was) {strcpy(d->name
,p);¶
d->id=i;¶
was=match_level;¶
}¶
p+=strlen(p)+1;¶
i++;¶
}¶
if (match_level==0)¶
werr(1,"Can't initialise fonts");¶
if (match_level<5) {sprintf(temp ,"Can't
find font ""%s"" -
 using %s instead",pref,d->name);¶
werr(0,temp);¶
}¶
font_find(d->name,(int)d->xpt*16,(int)
d->ypt*16,0,0,&d->handle);¶
}¶
¶
void font_utils_declarefont(font_desc
*d,char *name,float xpt,float ypt)¶
{strcpy(d->name ,name);¶
d->xpt=xpt;¶
d->ypt=ypt;¶
font_utils_verifyfont(d);¶
}¶
¶
void font_utils_redeclarefont(font_des
c *d)¶
{font _lose(d->handle);¶
font_utils_verifyfont(d);¶
}¶
¶
char *font_utils_add_font_to_menu(char
 *fname,char *d,int id,int pass,char sep
)¶
{if (pass==1)¶
return(d+1+strlen(fname));¶
return(d+sprintf(d,"%s%c",fname,sep));¶
}¶
¶
char *font_utils_makelist(fontlist_nod
e *n,char *d,char *current,int id,BOOL r
eg,int pass,char sep)¶
{int was=strlen(current);¶
if (reg)¶
d=font_utils_add_font_to_menu("(Regula
r)",d,id,pass,sep);¶
while (n!=0) {current[was]='.' ;¶
strcpy(&current[was+1],n->name);¶
if (n->flag)¶
d=font_utils_add_font_to_menu(&current
[1],d,id,pass,sep);¶
d=font_utils_makelist(n->son,d,current
,id,FALSE,pass,sep);¶
current[was]=0;¶
n=n->brother;¶
}¶
return(d);¶
}¶
¶
void font_utils_refresh()¶
{int need;¶
visdelay_begin();¶
if (font_root !=0)¶
fontlist_free_font_tree(font_root);¶
font_root=fontlist_list_all_fonts(FALS
E);¶
if (font_utils_names!=0)¶
flex_free(font_utils_names);¶
font_utils_work[0]=0;¶
need=(int)(2+font_utils_makelist(font_
root,0,font_utils_work,0,FALSE,1,0));¶
walign(need);¶
flex_alloc(font_utils_names,need);¶
*font_utils_makelist(font_root,*font_u
tils_names,font_utils_work,0,FALSE,2,0)=
'*';¶
visdelay_end();¶
}¶
¶
¶
void font_utils_uptodate()¶
{char temp[256];¶
os_read_var_val("Font$Prefix",temp,256
);¶
if (temp[0]==0)¶
werr(1,"Cannot locate any fonts");¶
if (strcmp(temp,font_utils_prefix)!=0)
 {strcpy(font_utils_prefix ,temp);¶
font_utils_refresh();¶
}¶
}¶
¶
void font_utils_init()¶
{/* init_memory_block(&font_utils_names
,0x10,TRUE); */¶
/* font_utils_refresh(); */¶
font_utils_uptodate();¶
}¶
¶
menu font_utils_sizemenu(char *title,c
har *buffer,float userval)¶
{char sub[64],*p=sub;¶
int i;¶
menu sizemenu;¶
for (i=0;i<5;i++)¶
p+=sprintf(p,"%d,",font_utils_fontsize
s[i]);¶
sizemenu=menu_new(title,sub);¶
menu_make_writeable(sizemenu,6,buffer,
6,"a0-9.");¶
return(sizemenu);¶
}¶
¶
menu font_utils_menu(char *maintitle,f
ont_desc *f)¶
{menu fmenu,smenu,hmenu,cmenu;¶
char main[256],sub[256],*p;¶
fontlist_node *n;¶
int i;¶
font_utils_uptodate();¶
cmenu=menu_new(maintitle,"Font name,Fo
nt size,Font height");¶
smenu=font_utils_sizemenu("Font size",
f->user_size,f->xpt);¶
hmenu=font_utils_sizemenu("Font height
",f->user_height,f->ypt);¶
p=main;¶
n=font_root;¶
while (n!=0) {p+=sprintf(p ,",%s",n-
>name);¶
n=n->brother;¶
}¶
fmenu=menu_new("Font name",&main[1]);¶
n=font_root;¶
i=1;¶
while (n!=0) {font _utils_work[0]=0;¶
p=font_utils_makelist(n->son,sub,font_
utils_work,f->id,n->flag,2,',');¶
*(p-1)=0;¶
menu_submenu(fmenu,i,menu_new(n->name,
sub));¶
i++;¶
n=n->brother;¶
}¶
menu_submenu(cmenu,1,fmenu);¶
menu_submenu(cmenu,2,smenu);¶
menu_submenu(cmenu,3,hmenu);¶
return(cmenu);¶
}¶
¶
void font_utils_subcount(fontlist_node
 *n,int *c)¶
{while (n!=0) {if (n->flag)¶
(*c)++;¶
font_utils_subcount(n->son,c);¶
n=n->brother;¶
}¶
}¶
¶
BOOL font_utils_altersize(char *hit,fo
nt_desc *f,int options)¶
{bool changed;¶
char *user=(options==1)?f->user_size:f
->user_height;¶
double new_size,was=(options==1)?f->xp
t:f->ypt;¶
if (hit[1]>0) {if (hit[1]==6)¶
new_size=strtod(user,0);¶
else¶
new_size=font_utils_fontsizes[hit[1]-1
];¶
if (new_size<=0 || new_size>=1000)¶
new_size=was;¶
changed=(new_size!=f->ypt);¶
f->ypt=new_size;¶
if (options==1) {changed=changed ||
(new_size!=f->xpt);¶
f->xpt=new_size;¶
}¶
}¶
return(changed);¶
}¶
¶
BOOL font_utils_menu_select(char *hit,
font_desc *f)¶
{bool changed=FALSE;¶
int new_id,i;¶
char *p;¶
fontlist_node *n=font_root;¶
switch (hit[0]) {case 1:¶
if (hit[1]>0 && hit[2]>0) {new_id=hit[2]
;¶
i=1;¶
while (i<hit[1]) {if (n->flag)¶
new_id++;¶
font_utils_subcount(n->son,&new_id);¶
n=n->brother;¶
i++;¶
}¶
changed=(f->id!=new_id);¶
if (changed) {p=*font_utils_names ;¶
if (new_id>1) {for (i=1;i<new_id;i++)¶
p+=strlen(p)+1;¶
}¶
strcpy(f->name,p);¶
}¶
}¶
break;¶
case 2:¶
case 3:¶
changed=font_utils_altersize(hit,f,hit
[0]-1);¶
break;¶
default:¶
break;¶
}¶
if (changed)¶
font_utils_redeclarefont(f);¶
return(changed);¶
}¶
void font_utils_ticksubmenu(int p,int
*c,int id)¶
{wimp_menuitem *mi;¶
int sub,was;¶
p+=sizeof(wimp_menuhdr);¶
do {was=*c ;¶
mi=(wimp_menuitem*) p;¶
sub=(int) mi->submenu;¶
if (sub!=-1)¶
font_utils_ticksubmenu(sub,c,id);¶
else¶
(*c)++;¶
if (*c>=id && id>was)¶
mi->flags=mi->flags | wimp_MTICK;¶
else¶
mi->flags=mi->flags & (~wimp_MTICK);¶
p+=sizeof(wimp_menuitem);¶
} while ((mi->flags & wimp_MLAST)==0);¶
}¶
¶
void font_utils_ticksizemenu(int p,fon
t_desc *f,float cur)¶
{int i;¶
wimp_menuitem *mi;¶
p+=sizeof(wimp_menuhdr);¶
for (i=0;i<5;i++) {mi=(wimp_menuitem*)
p;¶
if (cur==font_utils_fontsizes[i])¶
mi->flags=mi->flags | wimp_MTICK;¶
else¶
mi->flags=mi->flags & (~wimp_MTICK);¶
p+=sizeof(wimp_menuitem);¶
}¶
}¶
¶
void font_utils_tickmenu(menu m,font_d
esc *f)¶
{int count=0;¶
int p=(int)menu_syshandle(m)+sizeof(wi
mp_menuhdr);¶
wimp_menuitem *mi=(wimp_menuitem*) p;¶
font_utils_ticksubmenu((int)mi->submen
u,&count,f->id);¶
mi=(wimp_menuitem*)(p+sizeof(wimp_menu
item));¶
font_utils_ticksizemenu((int)mi->subme
nu,f,f->xpt);¶
mi=(wimp_menuitem*)(p+2*sizeof(wimp_me
nuitem));¶
font_utils_ticksizemenu((int)mi->subme
nu,f,f->ypt);¶
sprintf(f->user_size,"%-5.2f",f->xpt);¶
sprintf(f->user_height,"%-5.2f",f->ypt
);¶
}¶
```

C Listing 6

```
/* Title:   >c.memory¶
*¶
* Purpose: memory allocation library¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#include "flex.h"¶
#include "werr.h"¶
#include "macros.h"¶
#include <stdlib.h>¶
#include <string.h>¶
¶
typedef struct {char *anchor;¶
int used;¶
int extend;¶
int size;¶
BOOL flex;¶
} memory_block;¶
¶
void init_memory_block(memory_block *b
,int extend_units,BOOL flex)¶
{b->anchor=0 ;¶
b->used=0;¶
b->size=0;¶
b->extend=max(extend_units,4);¶
b->flex=flex;¶
}¶
¶
void ensure_memory(memory_block *b,int
 size)¶
{div_t d=div(size+b->extend-1,b->extend
);¶
size=d.quot*b->extend;¶
if (b->anchor==0) {if (size>0) {bool
ok;¶
if (b->flex)
{ok=(flex_alloc((flex_ptr)&b->anchor ,si
ze)!=0);¶
}¶
else {b->anchor=malloc(size) ;¶
ok=(b->anchor!=0);¶
}¶
if (!ok) {werr(1 ,"Out of memory");¶
}¶
}¶
}¶
else {if (size!=b->size) {if (size==0)
{if (b->flex)¶
flex_free((flex_ptr)&b->anchor);¶
else¶
free(b->anchor);¶
}¶
else {bool ok;¶
if (b->flex)
{ok=(flex_extend((flex_ptr)&b->anchor ,s
ize)!=0);¶
}¶
else {b->anchor=realloc(b->anchor
,size);¶
```

```
ok=(b->anchor!=0);¶
}¶
if (!ok) {werr(1 ,"Can't extend - out of
memory")
;¶
}¶
}¶
b->size=size;¶
}¶
}¶
}¶
¶
void ensure_extra_memory(memory_block
*b,int extra)¶
{if (b->used+extra>b->size)¶
ensure_memory(b,b->used+extra);¶
}¶
void memory_midextend(memory_block *b,
int offset,int extra)¶
{if (extra<0) {memmove(b->anchor+offset
,b->anchor+off
set-extra,b->used-(offset-extra));¶
ensure_memory(b,b->used+extra);¶
}¶
else {ensure_extra_memory(b ,extra);¶
memmove(b->anchor+offset+extra,b->anch
or+offset,b->used-offset);¶
}¶
}¶
void free_memory_block(memory_block *b
)¶
{ensure_memory(b ,0);¶
}¶
```

C Listing 7

```
/* Title:   >c.userlib¶
*¶
* Purpose: Misc routines¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#include "macros.h"¶
#include <stdlib.h>¶
#include <string.h>¶
¶
int userlib_lc(char a,BOOL any)¶
{return((a>='a' && a<='Z' && any)?a+'a'
-'A':a);¶
}¶
¶
int userlib_genstrcmp(char *s1,char *s
2,BOOL any)¶
{char c1=userlib_lc(*s1,any),c2=userlib
_lc(*s2,any);¶
if (c1==0 && c2==0)¶
return(TRUE);¶
if (c2==0)¶
return(FALSE);¶
if (c1==c2 || c1=='#')¶
return(userlib_genstrcmp(&s1[1],&s2[1]
,any));¶
if (c1=='*') {bool ok=FALSE;¶
char *s3=&s2[1];¶
while (!ok && *s3!=0) {ok=ok ||
userlib_genstrcmp(&s1[1],s3,a
ny);¶
s3++;¶
}¶
return(ok);¶
}¶
return(FALSE);¶
}¶
¶
int userlib_strcmp(char *s1,char *s2)¶
{return(userlib_genstrcmp(s1
,s2,TRUE));¶
}¶
¶
```

C Listing 8

```
/* Title:   >c.wimputils¶
*¶
* Purpose: general wimp utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#include "wimp.h"¶
#include "wimpt.h"¶
#include "win.h"¶
#include "template.h"¶
#include "werr.h"¶
#include "menu.h"¶
#include "bbc.h"¶
#include "coords.h"¶
#include <stdlib.h>¶
#include <string.h>¶
#include "macros.h"¶
¶
#define crs_left    0x18c¶
#define crs_right   0x18d¶
#define crs_down    0x18e¶
#define crs_up      0x18f¶
#define crs_shleft  0x19c¶
#define crs_shright 0x19d¶
#define crs_shdown  0x19e¶
#define crs_shup    0x19f¶
#define crs_ctleft  0x1ac¶
#define crs_ctright 0x1ad¶
#define crs_ctdown  0x1ae¶
#define crs_ctup    0x1af¶
#define del_left    0x07f¶
#define del_right   0x18b¶
¶
#define save_dontquit 'N'¶
#define save_thenquit 'Q'¶
¶
#define max_windows 64¶
¶
#define open_xstep 320¶
#define open_ystep 460¶
¶
typedef enum {in_centre ,in_space} open
_where;¶
¶
typedef struct {wimp_w hand;¶
wimp_w pane;¶
int panex,paney;¶
int id;¶
BOOL is_open;¶
BOOL has_pane;¶
BOOL del_when_closed;¶
} window_info;¶
¶
window_info winfo[max_windows+1];¶
int windows;¶
¶
void wimp_utils_set_icon_text(wimp_w h
and,wimp_i i,char *txt)¶
{wimp_icon icon_inf;¶
wimp_get_icon_info(hand,i,&icon_inf);¶
strcpy(icon_inf.data.indirecttext.buff
er,txt);¶
wimp_set_icon_state(hand,i,0,0);¶
}¶
¶
void wimp_utils_select_icon(wimp_w han
d,wimp_i i,BOOL select)¶
{wimp_icon icon_dat;¶
wimp_iconflags flags;¶
wimp_get_icon_info(hand,i,&icon_dat);¶
flags=(select)?wimp_ISELECTED:0;¶
if ((icon_dat.flags & wimp_ISELECTED)!
=flags)¶
wimp_set_icon_state(hand,i,wimp_ISELEC
TED,0);¶
}¶
¶
void wimp_utils_select_icon_from_group
(wimp_w hand,wimp_i i0,wimp_i i1,wimp_i
j){wimp_i k;¶
for(k=i0;k<=i1;k++)¶
wimp_utils_select_icon(hand,k,k==j);¶
}¶
¶
int wimp_utils_windowno(wimp_w handle)¶
{int i=0;¶
while (winfo[i].hand!=handle && i<max_
windows)¶
++i;¶
if (i==max_windows)¶
werr(1,"Unregistered window");¶
return(i);¶
}¶
¶
void wimp_utils_attach_pane(int w1,int
 w2,int xoff,int yoff)¶
{winfo[w1].has_pane=true ;¶
winfo[w1].pane=w2;¶
winfo[w1].panex=xoff;¶
winfo[w1].paney=yoff;¶
}¶
¶
void wimp_utils_remove_pane(wimp_w han
dle)¶
{winfo[wimp_utils_windowno(handle)].has
_pane=FALSE;¶
}¶
¶
void wimp_utils_set_ext(int i,int widt
h,int height)¶
{wimp_redrawstr data;¶
data.w=winfo[i].hand;¶
data.box.x0=0;¶
data.box.y0=-height;¶
data.box.x1=width;¶
data.box.y1=0;¶
wimp_set_extent(&data);¶
}¶
¶
void wimp_utils_open_window(wimp_opens
tr *o)¶
{int i=wimp_utils_windowno(o->w);¶
if (winfo[i].has_pane) {int
width,height;¶
wimp_w pn=winfo[winfo[i].pane].hand;¶
wimp_openstr p=*o;¶
wimp_wstate pst;¶
wimp_get_wind_state(pn,&pst);¶
width=pst.o.box.x1-pst.o.box.x0;¶
height=pst.o.box.y1-pst.o.box.y0;¶
p.w=pn;¶
p.box.x0=o->box.x0+winfo[i].panex-widt
h-2;¶
p.box.x1=p.box.x0+width;¶
p.box.y1=o->box.y1+winfo[i].paney;¶
p.box.y0=p.box.y1-height;¶
p.x=pst.o.x;¶
p.y=pst.o.y;¶
wimp_utils_open_window(&p);¶
o->behind=pn;¶
}¶
wimpt_noerr(wimp_open_wind(o));¶
winfo[i].is_open=TRUE;¶
}¶
¶
void wimp_utils_close_window(int i)¶
{if (winfo[i].has_pane)¶
wimp_utils_close_window(winfo[i].pane)
;¶
wimpt_noerr(wimp_close_wind(winfo[i].h
and));¶
winfo[i].is_open=FALSE;¶
if (winfo[i].del_when_closed)
{wimp_delete_wind(winfo[i].hand) ;¶
winfo[i].hand=-1;¶
windows-;¶
}¶
}¶
¶
void wimp_utils_front(int i,open_where
 where,int par1,int par2)¶
{wimp_wstate wst;¶
wimp_redrawstr check;¶
wimp_get_wind_state(winfo[i].hand,&wst
);¶
if (!winfo[i].is_open) {bool
found=FALSE,giveup=FALSE;¶
int j,x,y;¶
int sw=bbc_vduvar(bbc_XWindLimit)<<bbc
_vduvar(bbc_XEigFactor);¶
int sh=bbc_vduvar(bbc_YWindLimit)<<bbc
_vduvar(bbc_YEigFactor);¶
int real_width=wst.o.box.x1-wst.o.box.
x0;¶
int real_height=wst.o.box.y1-wst.o.box
.y0;¶
int width=min(real_width,sw-128);¶
int height=min(real_height,sh-200);¶
wst.o.x=wst.o.box.x0;¶
wst.o.y=wst.o.box.y1;¶
switch (where) {case in_centre:¶
found=FALSE;¶
break;¶
case in_space:¶
x=0;¶
y=sh-44;¶
while(!found && !giveup) {found=true ;¶
for(j=0;j<windows;++j) {if
(winfo[j].is_open)
{check.w=winfo[j].hand ;¶
wimp_getwindowoutline(&check);¶
wst.o.box.x0=x;¶
wst.o.box.x1=x+width;¶
wst.o.box.y0=y-height;¶
wst.o.box.y1=y;¶
if (coords_boxesoverlap(&check.box,&ws
t.o.box))¶
found=FALSE;¶
}¶
}¶
if (!found) {y-=par2 >> 2;¶
if (y<16+par2) {y=sh-44 ;¶
x+=par1 >> 2;¶
giveup=(x>sw-par1);¶
}¶
}¶
}¶
default:¶
break;¶
}¶
if (!found) {wst.o.box.x0=(sw-width)>>1
;¶
wst.o.box.x1=wst.o.box.x0+width;¶
wst.o.box.y0=180+((sh-180-height)>>1);¶
wst.o.box.y1=wst.o.box.y0+height;¶
}¶
}¶
wst.o.behind=-1;¶
wimp_utils_open_window(&wst.o);¶
}¶
¶
int wimp_utils_create_window(char *nam
e,int id,BOOL dwc)¶
{bool created;¶
wimp_w handle;¶
int new=0;¶
wimp_wind *window=template_syshandle(n
ame);¶
if (window==0 || windows==max_windows)¶
return(-1);¶
created=(wimpt_complain(wimp_create_wi
nd(window,&handle))==0);¶
if (!created)¶
return(-1);¶
while (winfo[new].hand!=-1) {new++ ;¶
}¶
winfo[new].hand=handle;¶
winfo[new].is_open=FALSE;¶
winfo[new].has_pane=FALSE;¶
winfo[new].id=id;¶
winfo[new].del_when_closed=dwc;¶
windows++;¶
return(new);¶
}¶
¶
void wimp_utils_init()¶
{int i;¶
for (i=0;i<max_windows;++i)¶
winfo[i].hand=-1;¶
windows=0;¶
}¶
¶
int wimp_utils_winfree()¶
{return(max_windows-windows) ;¶
}¶
```

C Listing 9

```
/* Title:   >h.drawutils¶
*¶
* Purpose: Misc drawfile utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#ifndef __drawutils¶
#define __drawutils¶
¶
#include "fontutils.h"¶
#include "macros.h"¶
¶
#define draw_utils_extend 1024¶
#define black 0x00000000¶
#define white 0xffffff00¶
#define darkgrey 0x50505000¶
#define lightgrey 0xdddddd00¶
#define transp -1¶
¶
extern memory_block draw_utils_obj;¶
¶
typedef enum {draw_ljust ,draw_centre,d
raw_rjust} draw_hjustify;¶
typedef enum {draw_bjust ,draw_middle,d
raw_tjust} draw_vjustify;¶
¶
typedef struct {draw_fontref fontref;¶
char          fontname[1];¶
} fontlist_entry;¶
¶
typedef struct {draw_pathstrhdr hdr;¶
int data[64];¶
} path_obj;¶
¶
void draw_utils_init(void);¶
void add_draw_object(memory_block *m,d
raw_object *o,draw_object where,BOOL ver
ify);¶
void draw_utils_begin_font_list(void);¶
void add_font_to_list(font_desc *f);¶
void begin_path_obj(unsigned char join
capwind,¶
unsigned char tricapwid,unsigned char
tricaphei,¶
draw_coltyp fillcol);¶
void add_obj(int x,int y,draw_path_tag
type t);¶
void add_move_to_path_obj(int x,int y)
;¶
void add_line_to_path_obj(int x,int y)
;¶
void end_path_obj(void);¶
void add_text_box(char *text,int x0,in
t y0,int x1,int y1,¶
draw_hjustify hjust,draw_vjustify vjus
t,¶
font_desc *f,draw_coltyp textcol,draw_
coltyp backcol,¶
draw_object *o,memory_block *m);¶
#endif¶
```

Listing 10

```
/* Title:   >h.fontutils¶
*¶
* Purpose: Misc font utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#ifndef __fontutils¶
#define __fontutils¶
¶
#include "font.h"¶
#include "fontlist.h"¶
#include "drawftypes.h"¶
#include "menu.h"¶
#include "macros.h"¶
¶
typedef struct {char name[48];¶
font handle;¶
draw_fontref no;¶
int id;¶
double xpt,ypt;¶
char user_size[8];¶
char user_height[8];¶
} font_desc;¶
¶
extern memory_block font_utils_fontnam
es;¶
¶
extern fontlist_node *font_root;¶
¶
void font_utils_listfonts(fontlist_nod
e *n,int *i,char *current);¶
void font_utils_refresh(void);¶
void font_utils_init(void);¶
void font_utils_uptodate(void);¶
int font_utils_number(char *name);¶
void font_utils_declarefont(font_desc
*d,char *name,float xpt,float ypt);¶
menu font_utils_menu(char *maintitle,f
ont_desc *f);¶
BOOL font_utils_menu_select(char *hit,
font_desc *f);¶
void font_utils_tickmenu(menu m,font_d
esc *f);¶
#endif¶
¶
```

C Listing 11

```
/* Title:   >h.macros¶
*¶
* Purpose: General macros¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#ifndef __macros¶
#define __macros¶
¶
#ifndef BOOL¶
#define BOOL int¶
#define TRUE 1¶
#define FALSE 0¶
```

```
#endif¶
¶
#define walign(a) a=(a+3)&(~3)¶
#define min(a,b) ((a<b)?a:b)¶
#define max(a,b) ((a>b)?a:b)¶
#define pts_to_draw(i) (i)*640¶
#define draw_to_pts(i) (i)/640¶
#define mpts_to_draw(i) (i)*64/100¶
#define draw_to_mpts(i) (i)*100/64¶
#define mpts_to_screen(i) (i)/400¶
#define screen_to_mpts(i) (i)*400¶
¶
#endif¶
```

Listing 12

```
/* Title:   >h.memory¶
*¶
* Purpose: memory allocation library¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#ifndef __memory¶
#define __memory¶
¶
#include "macros.h"¶
¶
typedef struct {char *anchor;¶
int used;¶
int extend;¶
int size;¶
BOOL flex;¶
} memory_block;¶
¶
void init_memory_block(memory_block *b
,int extend_units,BOOL flex);¶
void ensure_memory(memory_block *b,int
 size);¶
void ensure_extra_memory(memory_block
*b,int extra);¶
void memory_midextend(memory_block *b,
int offset,int extra);¶
void free_memory_block(memory_block *b
);¶
¶
#endif¶
¶
```

Listing 13

```
/* Title:   >h.userlib¶
*¶
* Purpose: Misc routines¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
int userlib_lc(char a,BOOL any);¶
int userlib_genstrcmp(char *s1,char *s
2,BOOL any);¶
int userlib_strcmp(char *s1,char *s2);¶
¶
¶
```

Listing 14

```
/* Title:   >h.wimputils¶
*¶
* Purpose: general wimp utils¶
*¶
* (C) Copyright D C Acton 1992¶
*¶
*/¶
¶
#ifndef __wimputils¶
#define __wimputils¶
¶
#define crs_left    0x18c¶
#define crs_right   0x18d¶
#define crs_down    0x18e¶
#define crs_up      0x18f¶
#define crs_shleft  0x19c¶
#define crs_shright 0x19d¶
#define crs_shdown  0x19e¶
#define crs_shup    0x19f¶
#define crs_ctleft  0x1ac¶
#define crs_ctright 0x1ad¶
#define crs_ctdown  0x1ae¶
#define crs_ctup    0x1af¶
#define del_left    0x07f¶
#define del_right   0x18b¶
¶
#define save_dontquit 'N'¶
#define save_thenquit 'Q'¶
¶
#define max_windows 64¶
¶
typedef enum {in_centre ,in_space} open
_where;¶
¶
typedef struct {wimp_w hand;¶
wimp_w pane;¶
int panex,paney;¶
int id;¶
BOOL is_open;¶
BOOL has_pane;¶
BOOL del_when_closed;¶
} window_info;¶
¶
extern window_info winfo[max_windows];¶
extern int windows,wins_defined;¶
¶
void wimp_utils_set_icon_text(wimp_w h
and,wimp_i i,char *txt);¶
void wimp_utils_select_icon(wimp_w han
d,wimp_i i,BOOL select);¶
void wimp_utils_select_icon_from_group
(wimp_w hand,wimp_i i0,wimp_i i1,wimp_i
j);¶
int  wimp_utils_windowno(wimp_w handle
);¶
void wimp_utils_attach_pane(int w1,int
 w2,int xoff,int yoff);¶
void wimp_utils_remove_pane(wimp_w han
dle);¶
void wimp_utils_set_ext(int i,int widt
h,int height);¶
void wimp_utils_open_window(wimp_opens
tr *o);¶
void wimp_utils_close_window(int i);¶
void wimp_utils_front(int i,open_where
 where,int par1,int par2);¶
int wimp_utils_create_window(char *nam
e,int id,BOOL dwc);¶
void wimp_utils_init(void);¶
int wimp_utils_winfree(void);¶
¶
#endif¶
```

Arm Programming

Listing 2

```
 10 REM >ARM2
 20 REM By Dave Lawrence
 30 REM For 32 bit machines
 40 REM (C) BAU July 1992
 50 :
 60 DIM code 100
 70 link=14
 80 pc=15
 90 FOR pass=0 TO 2 STEP 2
100 P%=code
110 [OPT pass
120 .fortest
130            MOV      R1,#1
140 .loop
150            SWI      256+ASC"*"
160            ADD      R1,R1,#1
170            CMP      R1,#11
180            BNE      loop
190
200            MOV      pc,link
210 ]NEXT
220 PRINT "Press SPACE to print stars!
:";
230 IFGET
240 CALL fortest
```

Listing 3

```
 10 REM >ARM3
 20 REM By Dave Lawrence
 30 REM For 32 bit machines
 40 REM (C) BAU July 1992
 50 :
 60 DIM code 100
 70 link=14
 80 pc=15
 90 FOR pass=0 TO 2 STEP 2
100 P%=code
110 [OPT pass
120 .fordemo
130            MOV      R1,#1
140 .loop1     MOV      R2,#1
150 .loop2     SWI      256+ASC"*"
160            ADD      R2,R2,#1
170            CMP      R2,R1
180            BLE      loop2
190            SWI      "OS_NewLine"
200            ADD      R1,R1,#1
210            CMP      R1,#5
220            BLE      loop1
230
240            MOV      pc,link
250 ]NEXT
260 PRINT "Press SPACE to run demo ";
270 IFGET
280 PRINT
290 CALL fordemo
```

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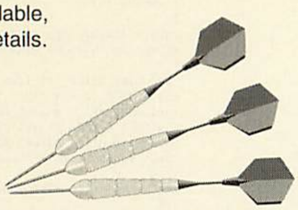
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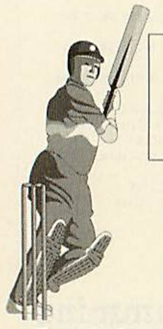


TopicArt7 - Sports Equipment



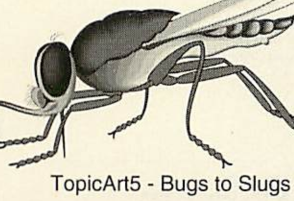
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SCSI Floptical Disk Drives

Yes its true!, each 3.5" floptical diskette can hold 20Mb of programs and data etc. Floptical disc drives which are SCSI devices are a wonderful complement to existing SCSI hard disc users or as an alternative to a hard disc solution.

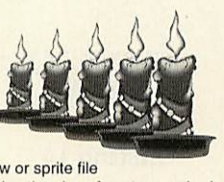


= 20Mb

Transfer rates are typically 65ms/100k/sec and like standard floppies are competely transportable. Flopticals are also a good media for backing up hard discs. All units are externally housed in an attractive case with power supply and includes one floptical floppy.

A3000/A5000/Archimedes Floptical (without SCSI card)	**£399**
A3000/A5000/Archimedes Floptical (with SCSI card)	**£499**
A5000 Internal Floptical kit (with SCSI card)	**£359**
Floptical floppies (20Mb)	**£20**

Tiler £10+VAT



A printing utility which allows you to print Draw or Sprite files at any size using any printer. The user simply loads the required draw or sprite file into Tiler specifying the size of poster required, using a preset paper size, ie. A2, A0 etc, or as a percentage of the original size or in physical dimensions, ie millimetres. The document will then be increased or decreased in size automatically and printed over several pages with crop marks provided on each page to assist cutting/overlapping.

MegaUtils £10+VAT

A set of genuinely useful RISCOS utilities
!AddrBook An easy to use address book.
!Diary A place to store your birthdays etc.
!CleanUp A hot key util for redrawing windows.
!Disable Prevents you from deleting any file.
!DOSForm A multi-tasking DOS 720k formatter.
!FileMon Displays information about any file.
!LineClock A desktop clock.
!MegaUtils provides a window organiser, key short-cuts to open/close filer windows, set copy and wipe options, set filetypes, quick loading of basic programs, caret flasher, selection of mouse speed, automatic opening of applications, mouse hider, caret grabbing.
!QuickMode Select modes with ease.
!QuickRun An application loader.
!ScrGrab Allows you to save the screen display to a Sprite.

Hardware, Software & Books (All prices exclude VAT)

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A5000 2MHD	£1499
4Mb RAM, 40Mb HD, MultiScan Mon	
A5000 2MHDLC	£1529
LEARNING CURVE SYSTEM with Multi Scan Monitor, Acorn DTP, 1st Word+, Genesis+, PC Emulator, Pacmania, etc.	
A5000 2MHDLCP	£1759
LEARNING CRV PRINTER SYSTEM Including Acorn JP-150 Ink Jet Printer	

A3000 (with free 2Mb RAM u/g)

BBC A3000	£599
As above with Monitor	£789
BBC A3000 LC	£639
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BBC A3000	£679
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As above with Monitor	£869

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ARM3, 8MB RAM	£2495

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A5000LC System	£1799
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520Mb 12ms Cache	£999
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120Mb 18ms Cache	£289
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40Mb 17ms	£315
80Mb 17ms Cache	£399
125Mb 18ms Cache	£485
180Mb 18ms Cache	£535
IDE A3000 Internal Hard Cards	
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SCSI Archimedes Internal	
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180Mb 18ms Cache	£599
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(Add £30 for Archimedes External)	

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Taxan 770+LR	£379
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Taxan Viking II	£749

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Canon BJ-300	£349
Canon BJ-330	£399
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HP DeskJet 500C	£499
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Laser Direct HiRes4	£999
Laser Direct HiRes8	£1319

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BJ-300 Ink Cartridge	£13
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DeskJet 500C Colour Cartridge	£27
LBP-4 Toner	£65
Swift 24 Mono Ribbon	£5
Swift 24 Colour Ribbon	£15

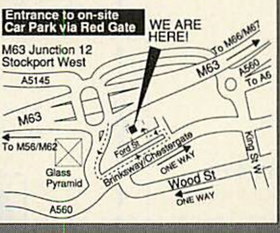
Hardware Upgrades

ARM3	£185
Canon BJ TurboDrivers (CC)	£49
FaxPack (CC)	£289
Joystick Interface (Inc Joystick)	£35
Midi Expansion Card	£65
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Where to Find Us



Books (No VAT)

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Dabs Archi First Steps	£9.95
Dabs Archi Operating System	£14.95
A3000 Technical Guide	£29.95
A540/A5000 Tech Guide (ea)	£65.00
Acorn DTP Adv User Guide	£14.95
Basic V: A Dabhand Guide	£9.95
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RISCOS PRM's	£79.00
RISCOS Style Guide	£9.95
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Acorn DTP Manual (Acorn)	£10.00
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ANSI C v4 Manual (Acorn)	£25.00

Software (Applications)

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Pandora's Box (4D)	£21
Pesky Muskrats (Coin-Age)	**£20**
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HELPING HAND

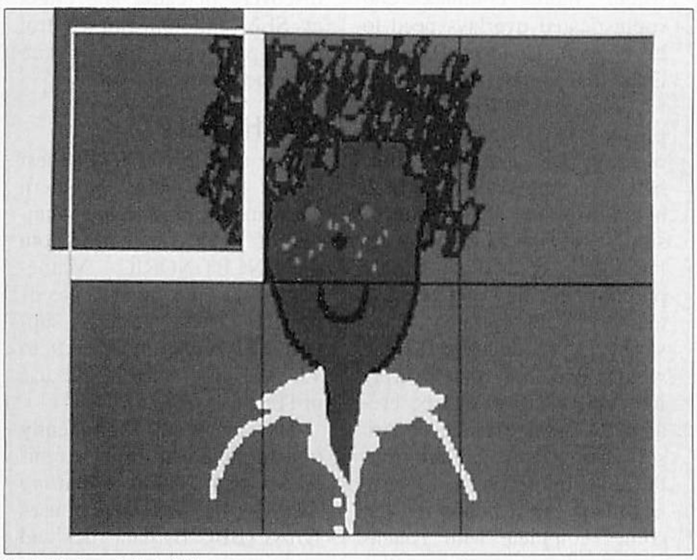
Chris Drage looks at some of the software on offer for those with special educational needs

Children with special educational needs are now able to communicate and have access to information that was previously beyond their capabilities. This is thanks to a variety of different input devices which we looked at in detail in *BAU* April 92. This time we will be taking a look at some of the software packages that have appeared during the past year and are relevant to special needs education.

It is not surprising that many authorities are purchasing Northwest SEMERC's *Phase 2* for their schools, as it provides a versatile, introductory word processor for key stages 1 and 2 and secondary special educational needs. It has easily created graphics screens, variable sized text and the ability to pop pictures into the text area. The wide choice of text colours, screen colours and print sizes makes it is suitable for children with moderate learning difficulties and the visually impaired.

Children enjoy being able to pick up a coloured sprite (from a *Clip Art 1* disc) drop it onto a page of writing and watch the writing flow around it. Similarly, borders (from *Borders 1 & 2* discs) add interest to a page, resulting in attractively framed work. Theme discs such as the *Hungry Caterpillar* and *Christmas disc,* that contain picture writing screens, templates and artwork, are also available.

One of the best communication aids to appear last year was *My World*, a framework program that allows children to pick up graphic objects and place them on a prepared background or diagram. The objects can be pictures or labels of any size, colour and font. Once you have worked through the 18 or so example screens you can see how the program can be used for a manner of cross curricular activities. *My World* screens are created in *Draw*. Loaded sprites, saved as objects, can be used equally well.



Earlybirds – delightfully easy to use

The design of the software ensures that aspects like screen size will always be constant. You can opt for the program to take over the whole screen or to work in a window. All work can be saved and printed out. A *Simple stuff* sampler disc contains an additional 17 screens to run in *My World* and includes everything from constructing and disassembling a skeleton to making a simple electrical circuit. *My World* is a versatile program for almost all levels. Look out for the French version *La Monde a Moi!*

LITERACY AIDS

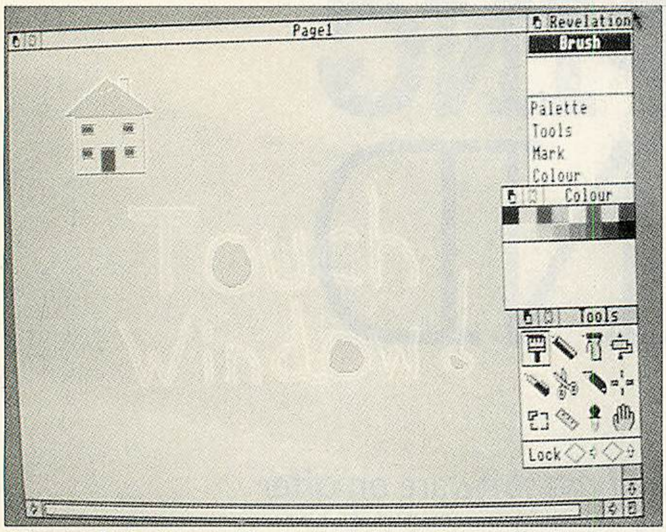
Brilliant Computing centres most of its software around introducing computer and pre-reading activities to children. Most of its software provides options that allow you to choose from a variety of input devices including most switches and the new Touchwindow. The popular *Blob 1 & 2* and *Count with Blob, First Steps, Switch On* and *Touchgames* successfully persuade children with disabilities to interact with the computer.

There is a variety of available pre-reading software. *Ted's Adventures* consists of two interactive picture story books and *Joystick games 1* is made up of five programs designed to teach direction and spatial skills. *Street Wise* is a suite of games that use pictures of common signs found in everyday life and *Everyday Signs* involves word matching to test children's ability to distinguish between commonly found words in society.

Both programs help to develop life skills. Ten self-created word sets, that can be adapted to suit the learner's needs are also available. Brilliant Computing's programs always impress me as they are thoughtfully designed, thoroughly tested and are altogether sound.

A new and innovative way of helping children with literacy is the mouse-controlled *My First Words.* It is a sentence building program where words are used to make and print sentences. Although the sample word banks provided are based on the *Ginn reading 360* scheme, a facility is provided that allows teachers to build up word libraries tailored to specific needs. It's a bit like using an on-screen Concept Keyboard and is fun to use.

Gridit is a flexible program with exercises designed to develop spatial awareness plus early numeracy and logical thinking. Children with learning difficulties can explore National Curriculum pre-level one, cause and effect, basic number concepts, as well as



Using standard software with a touch window: in this case Revelation

directions. They particularly enjoy the graded mazes. Like the other Widgit programs mentioned here, *Gridit* allows further exercises to be designed for curriculum areas other than maths.

Is it possible to have a graphic art program for the visually impaired? *Earlybirds1* for the Archimedes series is a sensibly designed and delightfully easy program to use. For some visually handicapped pupils it is the first graphics program that they have been able to use, according to reports from the Birmingham RCEVH. Clear, bold, mouse driven and virtually crash proof, the standard version of the program is ideal for pre-school and reception class children too. Once saved, the pictures can be used in a variety of other programs: *Snap, Cut up* and planned programs that cover sequencing, tessellation and pelmanism. I thoroughly recommend this suite

OVERLAY PROGRAMS

As Arc software for special needs makes increasing use of overlay keyboards, the need for a suitable overlay designer has never been greater. Of the Concept Keyboard overlay programs available for the Arc I recommend two in particular.

For busy teachers who wish to set up an overlay quickly and with little or no fuss, then *Conform* will do the job. Once an overlay has been created, you can change the font, text style, drop in sprites or *Draw* files on to the overlay and print it in either A3 or A4. For more demanding applications where more complex and sophisticated overlays need to be created, *Concept Designer* is the tool for the task.

As it is totally Risc OS compliant, it is possible to transfer overlays and associated files between applications which helps to reduce the editing of similar overlay files. An overlay file is created by simply pointing, clicking and entering text as appropriate. Once saved, a module is loaded which executes the overlay file. Overlay files can be created for a huge range of Arc software, freeing children from the constraints of the Qwerty keyboard. As a bonus it even comes complete with *Touchdata*, a *Touch Explorer Plus* type of application and *Softtouch*, which emulates a keyboard on screen, enabling overlays to be developed without the need for a Concept Keyboard.

From Pictures to Words is one of the most versatile items of educational software to appear in the past year as it can be used over a huge range of mainstream and special education applications that cover the English National Curriculum (levels 1 to 3). Using an extendable library of 300 pictures and nine activities, the teacher can adapt and create initial letter and spelling activities, such as picture matching with each target word illustrated by its picture. It is suited to older pupils with learning difficulties and particularly ESL children.

Screenplay is another program designed for teachers to create their own exercises. It provides simple animation and movement on a plain background which can be used for visual stimulation and cognitive development.

With *Screenplay* you can use background pictures and add foreground sprites to produce a collage, or move and animate pictures with full control over the size, speed, position and movement path. The program is simple enough for primary children to operate. A number of illustrative exercises are provided with the program which act as stimulus for new activities created by the teacher. This provides an excellent opportunity for language development and discovery of cause and effect as SEN children can control the progress of picture sequences and animations.

MATHS HELP

Lastly, to help you get the best out of IT in maths, Northern Micromedia produces a number of guides spawned from the NCET/NORIC Mathematics, IT and Special Needs project. These materials support SEN children aged 9 to 13, learning maths by the use of IT.

The ideas are imminently transferrable to the Archimedes and A3000. *Handling Data – An Introduction* uses *Grass* (BBC B) data files and associated workcards to build through the stages of data handling within the National Curriculum.

Roamer Maths aims to introduce children to Logo type activities by using the Valiant Roamer. The activities are divided into 'people activities', for the children to do and 'Roamer activities', designed to be explored with a Roamer or similar device. As an extension many of these activities have been replicated for screen Logo. A disc of these files is included in the pack for *Archimedes Logotron Logo*.

Each of these packs leaves plenty of scope for teachers to explore. Of the other four packs in the suite: *Learning About Shape, Learning About Symmetry, How Can I?...An Approach To Logo*, and *Number Games*; each is based on specific BBC B software although many of the ideas are equally valid for Archimedes users. The whole suite represents a worthwhile investment if you have both types of computer on site.

In the hands of a skilful teacher this range of IT-based activities will help deliver much of the maths National Curriculum for children with learning difficulties.

PRODUCT DETAILS

Products: Conform, Phases 2, My World,
Supplier: Northwest SEMERC,
Tel: (061) 627 4469
Price: £15

Products: Clip Art 1, Borders 1 & 2, Christmas Disc, Hungry Caterpillar
Supplier: Northwest SEMERC
Price: £7.50

Products: First Steps, Switch On, Joystick Games 1, Everyday Signs
Supplier: Brilliant Computing
Tel: (0274) 497617
Price: £13.35

Products: Ted's Adventures, Touch Games 1, Streetwise
Supplier: Brilliant Computing
Price: £15

Products: Earlybirds1, Snap, CutUp
Supplier: IT Service
Tel: (0527) 570566
Price: £25, £12.50 and £15 respectively

Products: From pictures to words, Screen play, Gridit
Supplier: Widgit Software
Tel: (0926) 885303
Price: £35, £35 and £30 respectively

Product: Concept Designer
Supplier: Longman Logotron
Tel: (0223) 425558
Price: £24

Product: My First Words
Supplier: Cambridgeshire Software House
Tel: (0480) 67945
Price: £29.95 includes site licence

Products: Mathematics Special Needs Set
Supplier: Northern Micro Media
Tel: 091-270 0424
Price: £30 for set
Individual prices: Learning about Symmetry £6, Number Games £4.50, How can I?... An approach to Logo £7, Others all £5 each

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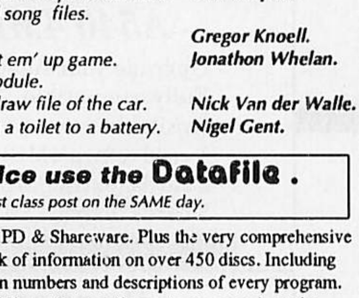
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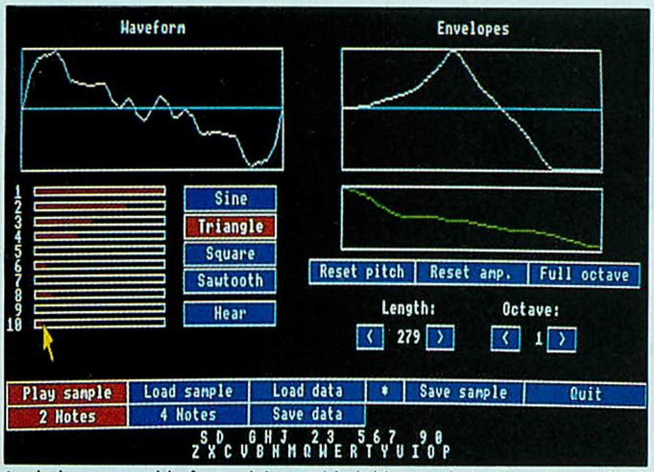
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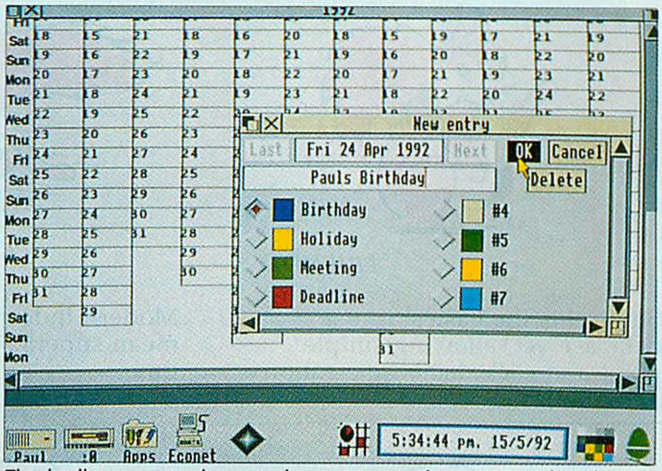
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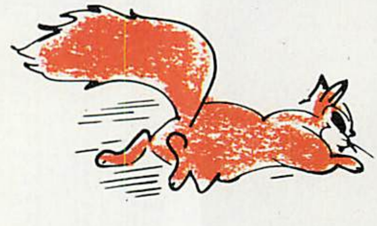
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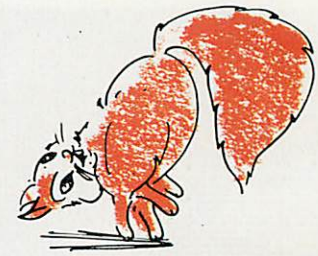
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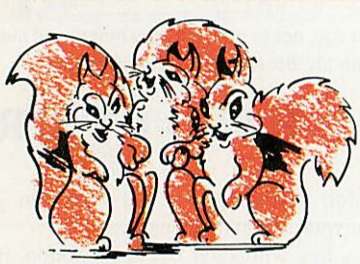
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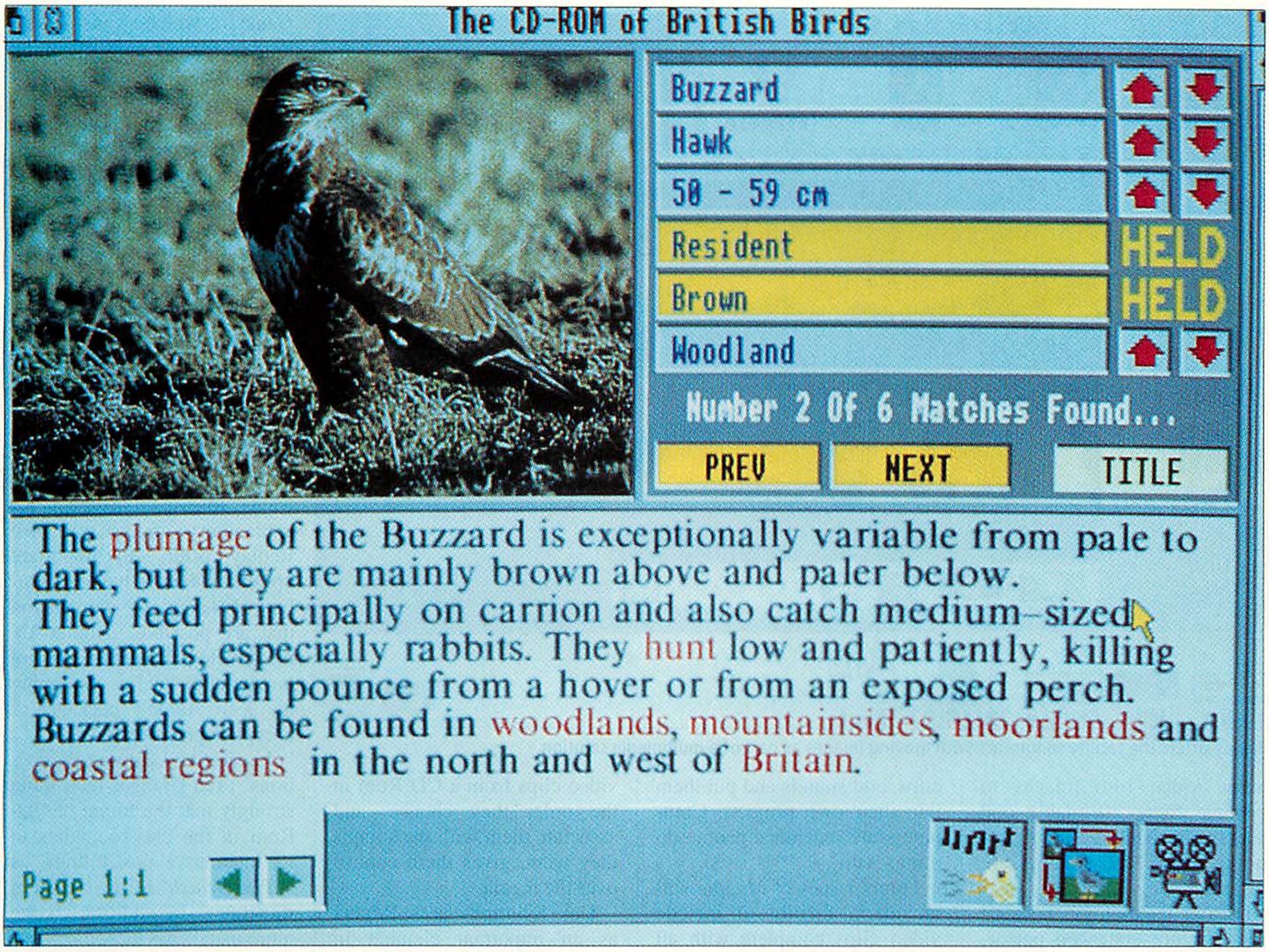
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ACTION REPLAY

Acorn Replay allows full motion video on an A3000 or Archimedes. Chris Drage looks at the educational benefits and compares it to the Apple QuickTime system

Children's attention can be captured easily by moving images – which, after all, they are used to seeing on TV every day. So it isn't surprising that full motion video (FMV) is now being incorporated into multimedia solutions for schools, effectively bringing 'desktop video' into the classroom.

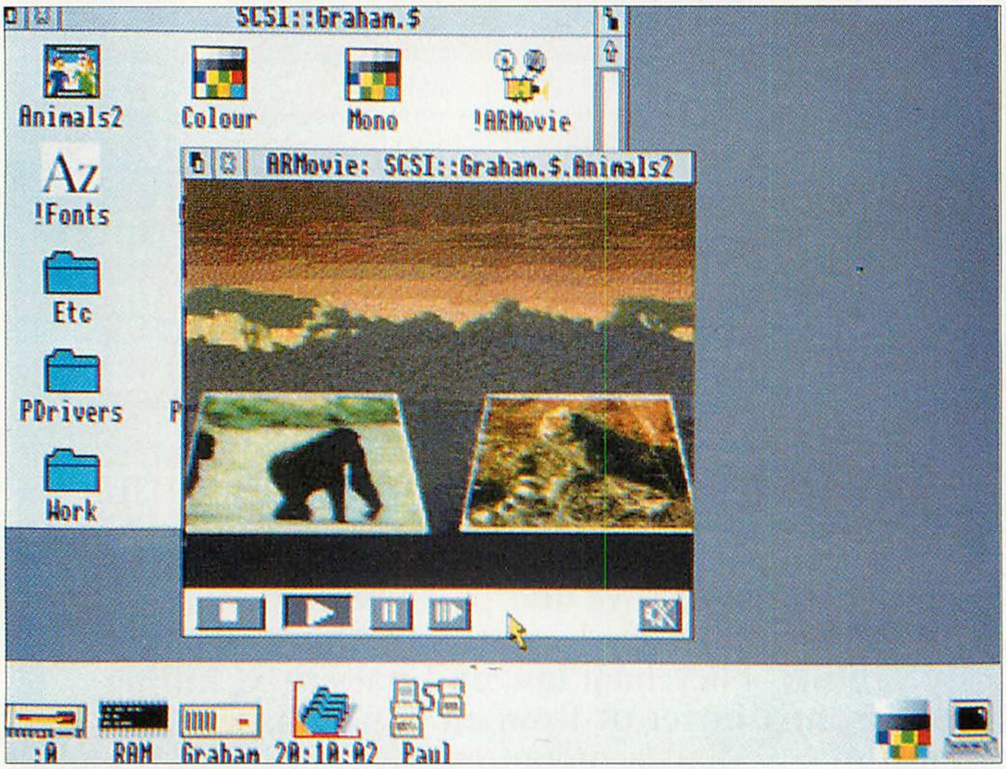
Full motion video isn't new, of course – Laservision discs and overlay cards offering 'interactive' video are already available. This is admirably illustrated by the British Nuclear Fuels' Energy and Mathematics video discs.

But, with an increasing number of educational establishments adopting CD-Rom as the standard for storing and diplaying multimedia applications in the classroom. Adding a video film clip can bring a new dimension to the information a teacher is trying to impart – with the old saying 'a picture says a thousand words' holding true. In terms of CD-Rom developments, since there are limits on the current trend of passive, information-providing systems that will end up in libraries, the moving image could be just the catalyst needed to speed up the demand for CD-Rom technology in schools.

Recently, Acorn and Apple both released FMV systems. Both permit digitised video to be run via a CD-Rom player on standard platforms, with no additional hardware costs. The Acorn Replay system (as described in *BAU* April 92) runs on any Risc OS machine (BBC A3000 or Archimedes) continuously displaying video at 12.5 fps (frames per second) with simultaneous sound.

So far, Replay has only been made available to software developers, since the level of hardware needed to make the sequences is very expensive. Apple's QuickTime system is initially available to all potential users as an extension of the operating system.

The reason for these FMV developments is essentially to



Replay offers the facility to interact with moving images as part of a multimedia solution

allow video film images to become more affordable and accessible. Neither the Acorn nor Apple FMV systems are restricted to relatively slow CD-Rom technology, because both feature enhanced performance from either an ordinary hard disc drive or a magni-optical disc.

Floppy discs, however, are out of the question because the access speed and the amount of data which can be held (about 12 seconds of 12.5fps movie on an 800K disc) are inadequate.

SOFTWARE

As important as the hardware developments are, they are really only a means to an end. It is the software which will dictate the future success of full motion video. Multimedia publishers in the Archimedes market, Longman Logotron (*Magpie*) and Oak Solutions (*Genesis*) both feel that FMV should simply be another form of illustrative information to be used by children in their own multimedia work. As Christopher Roper, Longman Logotron's managing director said: 'Multimedia should be something children *do* rather than have done to them. We see multimedia coming into its own when children can make videos and take digital video clips, add sounds and put them into their own projects. Computers are machines people do things with'.

Future issues of *Magpie* will include a facility to include video clips complete with all the necessary 'buttons' for control. The fact that children can take, select and paste video clips from a CD-Rom in the order they choose, and associate them with the sounds they want, gives them control over the media.

Oak Solutions sees Replay as an important element in both passive and active learning situations and already has a development version of *Genesis* which can handle Replay files. *Genesis* has the advantage of also providing a scripting language which provides a great deal of control over developing large, sophisticated applications.

Anglia Television believes Replay will be significant in opening up the kind of possibilities that Laservision seemed to present, but at a much more economical price. Anglia's Peter Stibbons said: 'We are certainly not giving up Laservision developments as it still presents the best quality, full-screen, moving image to date. When one wants to use movement for explanatory purposes, then Replay offers an important option. We now have a number of levels of explanation that are possible.' Anglia TV is developing CD-Roms of movie clips and is designing its *Key Author* package to accept Replay files.

Interactive Learning Productions' Fred Granger feels quite strongly that the future of CD-Rom in the classroom lies in its interactive possibilities, as ILP's *British Birds* CD-Rom illustrates. In addition to the more usual encylopaedic information, eight minutes of short video clips are used to illustrate those things which the

ACORN REPLAY

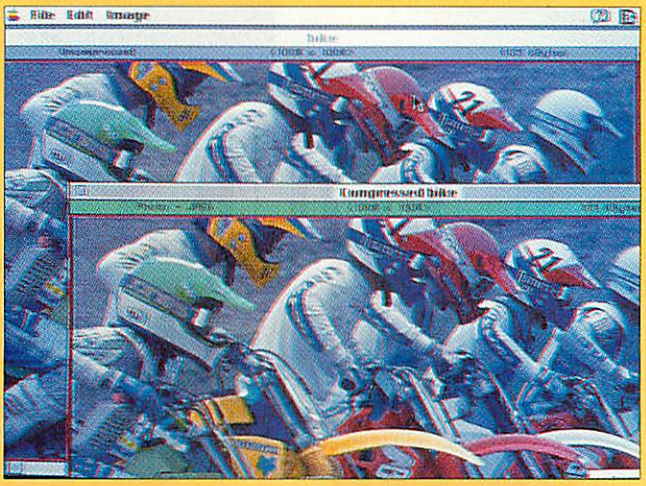
Acorn Replay was developed by Roger Wilson and his team at Acorn and supports simultaneous audio and video. It is available only to software developers at this time. Coupled with an A5000 and an optimum storage device — like a large hard disc drive, CD-Rom or magneto-optical drive — it presents the best moving digital video yet, running continuously at a fast 25 fps. This is due to the excellent decompression routines and processing speed of the Archimedes, which can suck data from the drive at 2Mb per second displaying it in real-time on a BBC A3000 with 2mb or more of Ram. This is far beyond the capabilities of most computer systems, which resort to expensive hardware to achieve the same result. Therefore, the system is cost-effective to run since even a standard, 2Mb A3000 can display FMV smoothly at 12.5 fps.

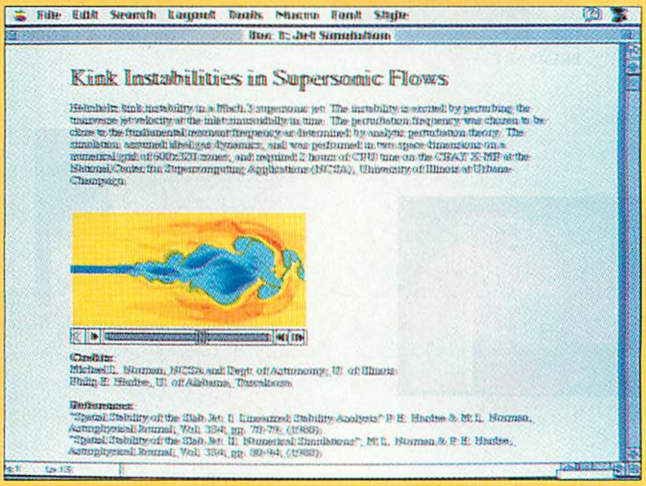
Replay can read sound data from disc and play it continuously without resorting to Ram to store the sound samples prior to output. It offers full clarity at correct pitch and can stop and start at any point in the recording. Replay's only major limitation is the Archimedes' maximum display of 256 colours. That apart, Replay is the best full motion video system to date.





APPLE QUICKTIME





The Apple QuickTime Starter Kit (£99 plus VAT) contains four software utilities required to begin making short movies.

A MoviePlayer program permits QuickTime movies and sound files to be viewed and edited, and features controls such as play, pause and single frame advance. There is a picture compressor and movie converter included to work on still images and dynamic data (such as QuickTime and Pic files). There is also a MovieRecorder program which, when combined with a video capture card (there are several on the market) allows you to make your own movies.

Apple QuickTime differs from Acorn Replay by being an extension of the Macintosh operating system. In this respect it works better under the modular System 7 than the now elderly System 6.07 and as such it will appear in the next release of System 7. Fundamentally an architecture, QuickTime complies to the Apple concept of 'media integration' (as opposed to 'multimedia'), which permits cut-copy-and-paste between any application and is a common characteristic of Apple computers. This enables applications like WordPerfect 2.0 and Persuasion (DTP) to make use of moving video.

Already a powerful editing program, Premier (Adobe) takes advantage of QuickTime. Being part of the operating system, it makes rewriting applications to incorporate QuickTime's FMV relatively easy as all configurable controls are actually systems calls. Although the memory required is a minimum of 2Mb of Ram, at this level QuickTime will read in video frames in segments which can result in 'dropping out' intermediate frames with loss of smoothness although sound replay is constant. With a 4Mb Mac and a CD-Rom storage device, 15 fps is possible, which compares with the 12.5 fps possible on Acorn's Arm2 machines, but hardly matches the cost or performance on Arm3 machines (the A5000). Another restriction is size. QuickTime currently occupies about 1/16th of the screen area. Any larger and the video becomes too jerky. QuickTime also works best in the 32,000 colour mode on 68020-30-40 processor Macs, which includes the monochrome Powerbook 140/170 portables, but rules out the Classic and SE models. If limited to 256 colours, QuickTime tries to dither the colours with resulting deterioration of quality.

still image cannot completely convey — the flight of the bird, how it catches its prey, how it feeds and those special features which have evolved in a bird to help it adapt to its surroundings.

With supporting curriculum packs – including workcards, quizzes, maps and a 'scrap book' facility to export data – *British Birds* should be one to look forward to.

INTERACTIVE

Databases of images are for children to use, not to sit goggle-eyed in front of. Their work should include moving pictures, processed and incorporated into something else to enhance understanding. The real breakthrough will come when children can go out and shoot their own video, edit it and include it in their own projects. Being able to take a video clip of a top athlete executing a long jump, and putting it into a *Magpie* presentation which includes children's own footage of their attempts at jumping, will enable realistic comparisons of techniques to be made.

Learning the vocabulary and grammar of the media will become important. If children have been through the process of creating their own 'news broadcast', surely they will have a greater understanding of the nature of visual media?

There are several inherent problems, mainly concerned with the huge amounts of data present. For example, stopping a movie and grabbing a one minute sequence would take 60Mb of storage.

Another authoring problem lies in the cost of converting analogue video (from your video player or camcorder) to digital format with sound synchronisation. At present, it costs about £100 per minute of video, which quite clearly puts it out of the reach of many potential users.

CONCLUSION

Although technically inferior to Acorn Replay, Apple QuickTime is available to all users, rather than just software developers, and is accessible via any Macintosh application. The Starter Kit coupled with a video digitiser (for example, VideoSpigot) provides everything the user needs to make short movies.

However, Acorn Replay will become accessible via *Magpie* and *Genesis* presentation packages and with an increasing number of CD-Rom applications. At the time of writing both the Replay and QuickTime modules cost developers nothing, although Acorn is currently looking into a licencing charge.

In terms of the facilities offered and the cost, it is difficult to assess which system comes out ahead overall. With each system it will be third-party suppliers providing discs of clip movies who will set the standards that users will become familiar with on their computers. This is simply because few in education have access to the additional expensive hardware required for the converting and storing their own movies.

As CD-Rom players become more affordable, the range of video clip material will increase rapidly. The ideal situation of children being able to take their own videos and include them in their own projects is some way off. However, as we progress through the 90s, the moving video image will become an increasingly important element of information handling and presentation in the multimedia aware classroom.

INFORMATION

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SPIKE GERRALL

The latest A3000 upgrade offers you a dual podule expansion. Dave Lawrence finds out more

TWO IN ONE

In Acorn's quest for a cheap Archimedes, the A3000 was inevitably subjected to a number of chops and cuts. The most notable reduction in specification from A300s and A400s were the expansion facilities. The A3000 is the only 32-bit Acorn machine that does not have the ability to fit four podules internally. It has only one external podule and one special internal one. And, to make matters worse, the A3000 internal podule is smaller than the standard Arc expansion podule and so it is not always possible to use it for complicated cards, such as the Aleph One PC card.

The Pres double podule expansion kit solves the problem by providing a two slot backplane for the A3000. It slots on to the back of the existing external podule to allow the user to fit two standard external podules, rather than one. The A3K4 kit, as it is imaginatively called, is actually an expansion to the Pres A3K3 kit – which allows just one podule to be cased outside the A3000. The A3K4 simply creates space for a second podule to be fitted within the same case, above the other.

To adapt the old A3K3, the original lid is removed and used as the lid on the completed box. Assembling the metal work was very easy: four bolts secure the side panels to the A3K3 and eight plastic studs are used to fix the top and bottom supports. I was sceptical of these to start with, but they seemed to hold the case securely. Finally, the whole caboodle is attached to the rear of the A3000 using the A3K3 screws.

One of Acorn's cuts in the design of the A3000 means that one control signal – Podule select MemC – is not present on the external expansion connector. This means that it is not possible to plug in more than one podule into the slot 'in parallel', so a little jiggery-pokery is called for.

The faint of heart should stop reading here, as to do this you need to remove the lid from your computer and twiddle with its innards. All you really need is a flat bladed screwdriver and a little confidence. If you are lacking either of these, then your local dealer will probably be happy to install the upgrade for you.

In operation everything happened as expected, I tried various combinations of Scan Light, Watford digitiser, Oak SCSI, LaserDirect, Armadillo Sampler, all worked without fault. I could quite imagine many people using the system with either SCSI and LaserDirect, or a scanner and LaserDirect and an internal IDE drive.

I found the installation to be quick and easy – five minutes at the very most. You do, however, lose a degree of portability and also need to pull your machine eight inches out from the wall. If you are planning to extend your system greatly, then it may be worth moving to a new machine with easier expansion ability.

But if you are sticking with your A3000, and especially if you already have an A3K3, then this product provides a useful way forward.

THE INSIDE STORY

Assuming you have braved the project, and are now inside the case, you need to remove one of the Rom chips, plug it into a small carrier (in fact, a chip socket with a flying lead) and replace it in the Rom socket. Then plug a small adaptor board on top of one of the chips (the interface controller, IOC) link this to the Rom carrier with its flying lead, attach a second lead to the IOC board and plug the other end on to the new backplane card.

The dual backplane can then be installed within the new metalwork and pushed firmly on to the external expansion connector. If everything is connected properly, a small tell-tale LED on the IOC board will light up when the machine is switched on.

My only reservation is that there is no obvious place for the flying lead from the IOC to come out of the rear of the machine and into the podule housing. Pres recommend that you pass the lead between the back metalwork and lid, near the middle of the machine. This will place minimum pressure on the wire.

Short of filing a notch in the metal work, I can see no simple alternative. You may like to wrap a small piece of insulation tape around the wire at the point of entry to reduce any possibility of severing the wire.

PRODUCT DETAILS

Product: A3000 double podule expansion port
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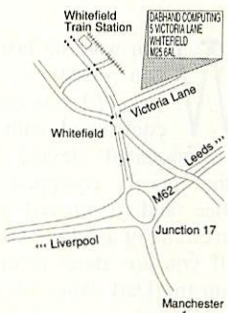
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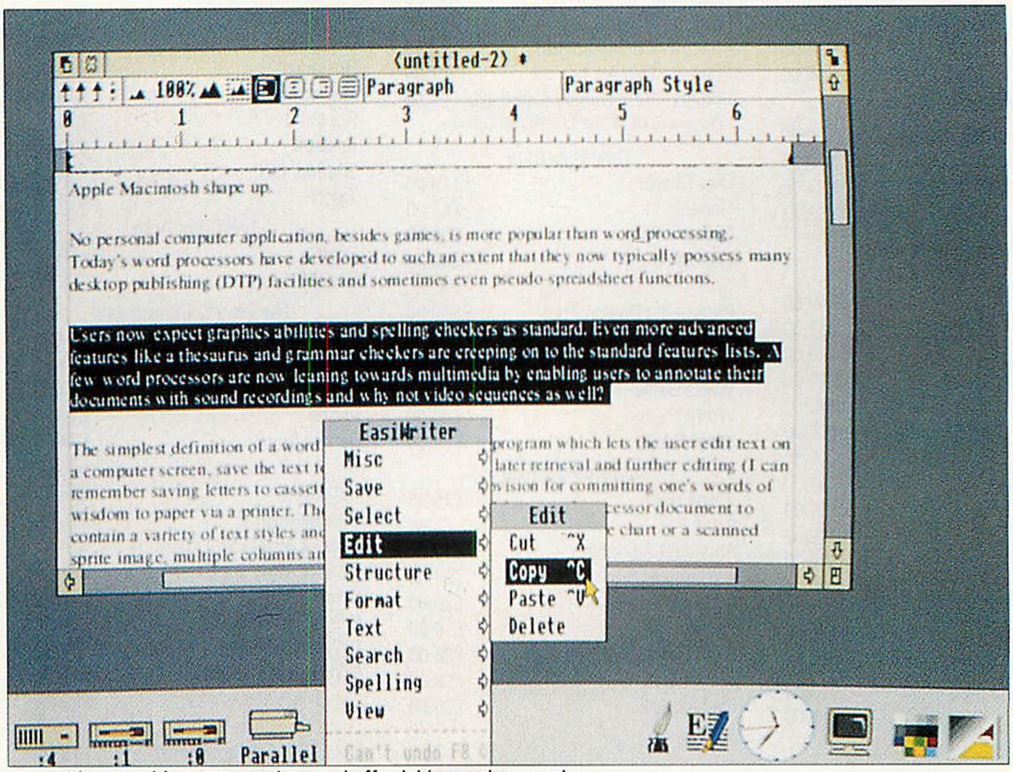
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WORD WISE

Want to wax lyrical on your computer? Ian Burley guides you through the multitude of word processing options on the Archimedes

When was the last time you used a typewriter? I was recently confronted with such an antiquated device in a rather poorly equipped press office and it proved to be something of a culture shock.

If you are about to emerge from the Dark Ages of typewriting and want to move up to word processing or, if you have already reached that stage and want to know what lies beyond the *Edit* application, there are a multitude of choices open to you. To clarify what's available, we looked at some of the key word processing packages for the Archimedes market. And, of course, this is not the only option: word processors can be included within other applications such as DTP and spreadsheet packages. But first, let's look at what you can expect from word processing.



Easy Writer provides unpretentious and affordable word processing

WHAT IS WP?

Apart from games, there are few personal computer applications more popular than word (or text) processing. A word processor allows you to write and edit text on a computer, save the text to a storage medium (hard or floppy disc). It can then be retrieved for further editing, printing or it can be imported into another application.

Most word processing packages contain a variety of text styles and sizes, some illustrations like a *Draw* file chart or a scanned sprite image, multiple columns and even tabulated data. WP users have come to expect facilities, such as spelling and grammar checkers, a thesaurus, and

WP ON OTHER MACHINES

In recent years, *Word Perfect* has been an institution in the PC world, deposing *Wordstar* as the best selling PC word processor in the mid-80s. A modified version of *Word Perfect* is also available for Macintosh users.

Word Perfect has a recommended retail price of £399. When compared with Archimedes packages, such as *Easiwriter* at £150, this seems extremely expensive. So what are you getting for the hefty price tag?

Well, *Word Perfect* is currently available in two forms: character-based and GUI (graphical user interface), the latter designed for Microsoft *Windows* as well as the Apple Mac. The GUI versions haven't yet earned the universal praise lavished on the original PC character-based versions. Criticism mainly centres around over-complexity which tends to defeat the general ethos of easy-to-use GUIs.

That's not to say *Word Perfect* lacks features, which include a table of contents generator, multilingual spelling dictionaries, built-in drawing tool, thesaurus, DTP-like text boxes, multiple columns, user-definable macros, and so on.

Word Perfect has good graphics' capabilities and the ability to manipulate text in a variety of ways – rotate it, for example. But the disadvantages are that some of these effects are not visible in edit mode. Unlike the Archimedes with its Risc OS fonts, *Word Perfect* can only display a near enough perfect rendition of the page as printed via a non-editable preview mode.

In terms of sales, *Word Perfect* is still the favourite *Windows* WP package, despite many poor reviews. The Mac version 2.0, which is cheaper at £299, has been well received, but is up against stiff competition. *Word Perfect* is certainly a capable package and has many extras thrown in, but whether it's easy enough to use, in order to fully exploit these features is another question.

even graphic capabilities. A few word processors are also leaning towards multimedia by enabling users to annotate their documents with sound recordings, or even video.

The original simple definition of a word processor is easily met by *Edit*, which is supplied free with all A3000 and Archimedes computers. However, *Edit* is generally regarded as a text editor rather than a word processor and is better suited as a tool for editing programs and batch files. There is no support for fancy text styles or graphics either. Of course, there is nothing to stop you writing a novel using *Edit*, but it would be much easier using a purpose-designed word processor.

Until the new version of the Archimedes' operating system, Risc OS 3, appeared with the new A5000, *Edit* did not even offer word wrap. Many users find *Edit* indispensable as a handy notepad, always available at a mouse click's notice. But as full-blown word processing goes, much better options are available.

FIRST WORD PLUS

First Word Plus is an entry-level word processor supplied with the Acorn Learning Curve package and was one of the first programs available under Risc OS. Today its age is all too evident.

This word processor was converted from a program originally designed for the IBM PC and Atari ST, running under the Gem desktop environment. The legacy of this conversion is that *First Word Plus* does not use Risc OS outline fonts nor Risc OS printer drivers. For the serious Archimedes user, these are crucial disadvantages.

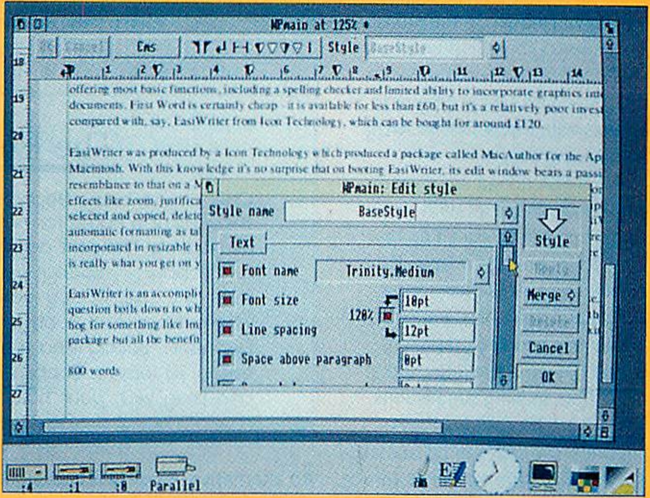
However, *First Word Plus* is otherwise a reasonably well specified 'junior' word processor offering most basic functions, including a spell checker and limited ability to incorporate graphics into documents.

EASIWRITER

First Word Plus is certainly cheap – it is available for less than £60, but it is a relatively poor investment when compared with, say, *EasiWriter*.

EasiWriter from Icon Technology can be bought for

MORE THAN JUST WORDS



Ironically, the two most popular 'word processors' for the Archimedes – *Impression* by Computer Concepts (shown to the right) and *Pipedream* by Colton Software (shown below) – are not word processors in the true sense of the word. *Impression* is a DTP package and *Pipedream* is an enhanced spreadsheet and database program. However, both are equipped for the specific requirements of word processing and are probably used for that purpose more than any other independent packages.

When Computer Concepts originally started to think about an Archimedes' successor to its enormously popular *Wordwise* word processor for the BBC micro, it decided, with some justification, that the Archimedes' Risc OS operating system, outline fonts and graphical user interface desktop environment demanded a DTP-like solution. DTP was already established on the Apple Mac and PC compatibles, but DTP was too slow for everyday use.

Instead, Mac and PC DTP users resorted to generic word processors for text preparation and then exported the text to their DTP applications for final layout and printing. Computer Concepts decided that by using optimised machine code programming to harness the power of the Archimedes' Risc processor, they could produce a DTP package fast enough to be used as an everyday word processor. By and large, that's just what *Impression* is.

Impression (now at release 2) offers immensely powerful text style selections which fully exploit Acorn's advanced Risc OS outline font technology. On the debit side, the complexity of *Impression* styles takes some getting used to. However, an improvement has been the addition of standardised style parameters – such as bold, italic and underline – called 'effects'. It would be nice to see a development of *Impression* which adopted the current PC *Windows* trend of iconised 'button' bars for instantly accessible effects.

Impression has excellent layout and graphics' capabilities and a smart spell checker which is very good at finding sensible alternative word spellings. Being a frame-based DTP package, it's inconceivable that you wouldn't be able to produce a document page, liberally sprinkled with a variety of text styles and graphics, precisely how you wanted it to look. However, *Impression* is a touch of overkill for merely writing quick notes and it will take time for a novice to fully exploit the package.

Pipedream on the other hand has now reached release 4.0. It is the latest in a long line of developments which started as *View Professional* on the eight-bit BBC micro. *Pipedream*, like *View*, has always been a spreadsheet program with a word processor 'shell'. The philosophy is that spreadsheet cells need not be restricted to numbers, formulae or sheet annotations, but should accommodate formatted word processor text as well.

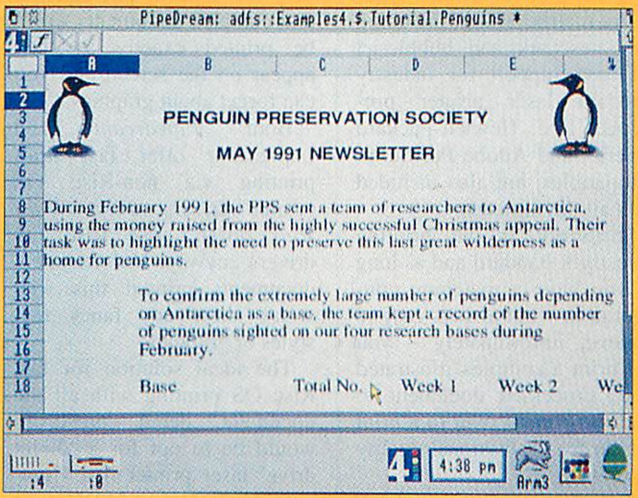
To achieve this aim, Colton Software endowed its package with word processing functions such as a versatile search and replace facility, spell checker, text format ruler, headers, footers, margins, word wrap, justification, page numbering, mail merge and indexing.

As *Pipedream* is an elaborate compromise between spreadsheet and word processor, it doesn't always behave as you would expect a word processor to.

Pipedream's biggest failing is its line-orientated text format which severely restricts text selection and editing. Text styles cannot be mixed on the same line without resorting to the complications of separate columns. On the other hand, this is partially offset by *Pipedream's* inherent ability to mix text and working spreadsheet sections. As a spreadsheet package, control over columns is comprehensive, though a minus point is that you cannot insert tabs without creating a new column.

There is no automatically spaced tabulation facility, in the style of *EasiWriter*. Also text styles, graphics and layout options are basic, especially when compared with *Impression*.

But, with careful use, *Pipedream* is capable of generating some impressive looking documents which can include sprite or *Draw* file illustrations. It's just a bit quirky to use.



around £120. Icon produced a package called *MacAuthor* for the Apple Macintosh. With this knowledge it's no surprise that on booting-up *EasiWriter* its edit window bears a passing resemblance to a Mac.

Everything looks simple and easy; there are unpretentious icon buttons for basic effects like zoom, justification and centering, plus an simple horizontal ruler. Several paragraphs can be selected and copied, deleted or moved together as one lump.

Table handling is particularly good on *EasiWriter* with automatic formatting as tables are filled. There is also a good multi-lingual spelling checker. Graphics are easily incorporated in resized boxes; printing is handled by the usual Risc OS drivers, meaning that what you see on screen is really what you get on your hard copy. Unfortunately, there is no fast draft printing option.

EasiWriter is an accomplished, medium-specification word processor which is affordable and easy to use. The question for the user is whether to choose a traditional package like this, or go for a DTP package which offers WP facilities with the benefits of superior document layout capabilities.

PRINTING

Another factor to bear in mind when choosing a word processor is printing capabilities. Risc OS will serve most types of dot matrix printer, including the latest ink and bubble-jet devices. Support for industry standard laser printer protocols, like Hewlett-Packard Laserjet and Adobe PostScript compatibles, are also included with all Archimedes.

PostScript is the printing industry's standard and as long as you have a matching configuration – not always easy to achieve, unfortunately – you can print a complex illustrated word processed document to disc and hand it over to a print bureau for professional quality typesetting.

Dot matrix printers and HP Laserjet compatibles can be the slowest option when printing documents which use Archimedes Risc OS outline fonts and contain graphics. This is because the document is sent to the printer as one big graphic picture, perhaps containing more than 1Mb of data per page. However, by using a draft printing mode, which uses the printer's built in character set, printing can be very fast indeed. The catch is that complex documents won't be printed exactly as they appear on the screen and you can forget about graphics.

Both *Pipedream* and *Impression* offer fast draft printing via non-Risc OS printer drivers. *First Word Plus* doesn't use Risc OS drivers anyway. Unfortunately documents printed this way won't show any fancy text styles or graphics.

The ideal solution for fast Risc OS printing with all the document detail preserved would be to opt for a 'direct drive' laser printer like Computer Concepts' LaserDirect or ArcLaser from Calligraph.

CONCLUSION

Your choice of WP package will depend very much on the sort of documentation you want to produce. For the odd letter, then the 'free' *Edit* program on your A3000/Archimedes is all you need.

While *First Word Plus* is a better option, albeit outdated, it can offer more WP facilities and, if you buy an Acorn Learning Curve package, it is 'free' anyway. The latest information we have from Acorn is that this program may be replaced in the near future with a better WP package for the Learning Curve.

For more serious work, it is worth considering a package which offers more than just word processing. Even if you buy a good, dedicated package such as *Easiwriter*, you are not that far away from the cost of a DTP package. After all, it is a natural progression from word processing to document layout, therefore a DTP package such as *Impression* or *Ovation* may be a better choice in the long run.

Similarly, if you want to integrate words with numbers, in business reports for example, then *Pipedream 4* makes a good choice.

PRODUCT DETAILS

Product: EasiWriter
Supplier: Icon Technology
Tel: (0533) 546225
Price: £150 plus VAT

Product: Pipedream
Supplier: Colton Software
Tel: (0223) 311881
Price: £196 plus VAT

Product: Impression
Supplier: Computer Concepts
Tel: (0442) 63933
Price: £169 plus VAT

Product: Pendown
Supplier: Longman Logotron
Tel: (0223) 42558
Price: £54 plus VAT

Product: Phrase#2
Supplier: Northwest Semerc
Tel: 061- 627 4469
Price: £15 plus VAT

Product: First Word Plus
Supplier: Acorn suppliers
Tel: (0223) 245200
Price: Around £63 plus VAT

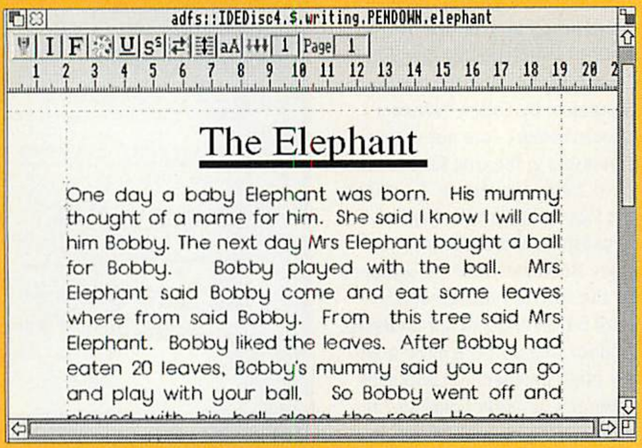
EDUCATIONAL WP

PenDown (shown on the right) is a fully Risc-OS compliant word processor which has become the de facto standard text processor in schools with BBC A3000 or Archimedes computers.

A full-functioned word processor, *PenDown* comes with six fonts, that can be scaled up to one-letter-per-page in any combination. *PenDown* accepts sprites and draw files, either of which may be sized on-screen.

The powerful spelling checker also offers spelling suggestions and a word list facility allows specific dictionaries to be created. Best of all, *PenDown* can be configured for a variety of user levels making it suitable for pupils aged eight upwards. Layout facilities include justification, centring, line spacing, multiple rulers and variable underline.

PenDown offers schools a smooth, consistent and powerful writing environment which which ideally complements the National Curriculum. Children used to *BBC Pendown* appreciate the large spelling dictionary and the ability to display their chosen pictures and fonts in almost any size and see the printed results matching those displayed on screen.



An alternative, *Phase#2* is basically a type in/print out word processor which aims to be easy to use, possessing the ability to display text in six fixed sizes and to enable pictures and borders to be popped into the text area.

It directly supports the child with special educational needs in the mainstream classroom environment, although several authorities have opted to make *Phases#2* their standard primary word processor.

A designer option permits teachers to fix aspects of the program to ensure consistency in layout. It is suitable for children with moderate learning difficulties (including the visually impaired) since it provides a wide choice of text colours, screen colours and print sizes. Discs of borders and graphic images on specific themes are available and they encourage children to experiment. With the growing library of support materials, the *Phases* family should provide a versatile introductory word processor for those tackling key stages one and two.

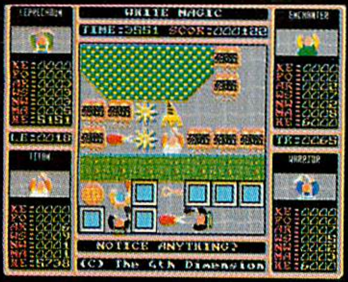
Other educational packages which have WP facilities include ESM's *Desktop Folio* DTP package and Oak Solutions' *Genesis 2*, the hypermedia package.

Chris Drage

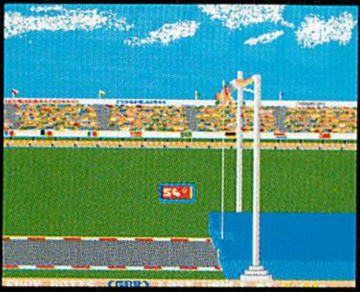
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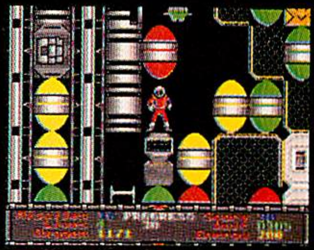


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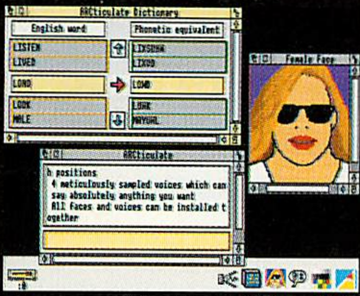
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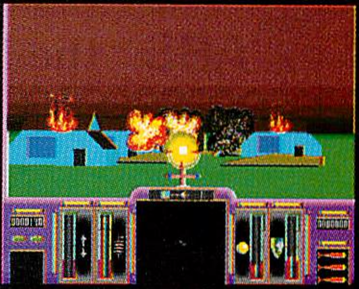
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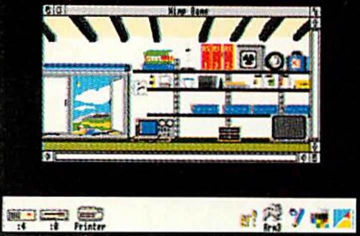


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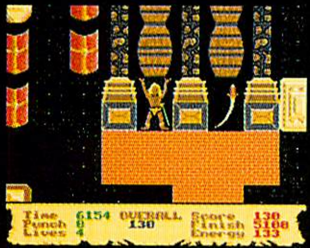
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THE DRIVING FORCE



Winner of the Best Printer in the recent Computer Shopper Awards, the Cannon BJ10ex printer has revolutionised the small printer market. It offers 360 dpi, near laser printer quality, on plain A4 paper, in an incredibly compact and lightweight housing. Unfortunately the existing RISC OS printer drivers, based on the standard Acorn drivers, have definitely been in the slow lane, locking your computer up for the entire print process, often up to ten minutes per page.

Computer Concepts have now created a set of RISC OS printer drivers, called TurboDrivers, that are optimised for the Cannon BJ10ex printer. The result is the perfect combination of budget printer and RISC OS printer driver, able to print full 360 dpi high resolution pages at a quality superior to that available from any dot matrix printer.

The TurboDrivers not only print the pages faster, but give control back sooner - up to ten times quicker. The table shows the time taken to print and the time the computer is occupied for some typical example pages.


Shows optional sheet feeder attached to printer

The TurboDrivers print faster on an ARM2 machine than traditional drivers on an ARM3 machine. In addition they can send the print data to disc and then print from disc in the background, so the computer and almost all memory remains free for other uses, while the printer gets on with printing.

	Standard Driver	TurboDriver	
	Time to complete	Time to complete	Time to get control back
A complex page of text & graphics	521 seconds	199 seconds	70 seconds
2 pages text in different fonts	753 seconds	283 seconds	64 seconds
One complex page from !Draw	643 seconds	261 seconds	187 seconds

All times in seconds from a standard ARM2 Archimedes with 4MBytes RAM and hard disc. Times would be faster for an ARM3 based machine.

BJ10ex printer & drivers £249.00 + VAT (£292.57) + p&p. Optional 30 sheet feeder £48.00 + VAT (£56.40)
TurboDriver software & printer cable £49.00 + VAT (£57.57)

Compatible with all applications that use the RISC OS printer drivers and all Archimedes models.

RISC OS **Turbo** DRIVERS

Computer Concepts Ltd

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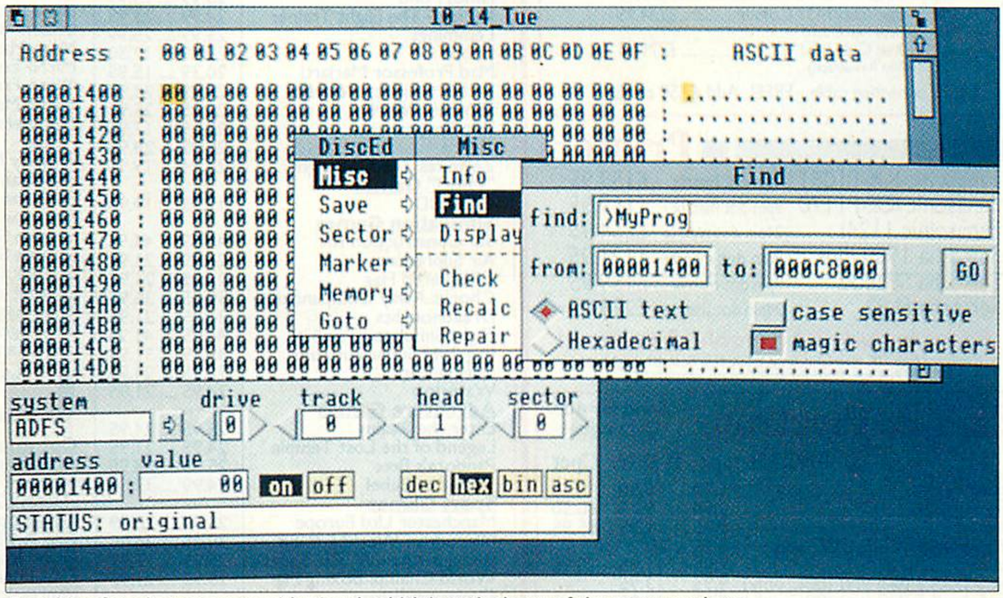
TO THE RESCUE!

Ever deleted a useful file, or trampled on a vital disc? Dave Acton finds out how Disc Rescue can save the day

There comes that dreadful moment in every computer user's life when you delete that vital file. And what is worse, you didn't make a backup copy. Oops.

Eight-bit BBC users have had the benefit of disc recovery programs for years, but A3000 and Archimedes users have not been so fortunate. Now help is at hand, in the form of *Archimedes Disc Rescue* from Look Systems.

The box below highlights the main ways that data can be lost and how *Disc Rescue* can help. At the heart of the package is *DiscEd* – a disc sector editor. A section of the disc is shown in a window as hex and Ascii data and you can skip around the disc using the tool panel beneath. You can also choose how many disc bytes appear (256 to 2048) – handy if you've got a large monitor. Of course, you can edit individual bytes and resave them and there are also search facilities, so you can look for particular files (invaluable when recovering lost data).



Searching for a lost program with DiscEd, which is at the heart of the rescue package

Other disc formats can be accommodated simply by dragging their disc 'records' on to *DiscEd* (Atari, PC and Acorn DFS formats are supplied). You can also save the disc record – the manual particularly recommends this for hard discs, since if the copy of the record on the disc becomes corrupt, the disc editor won't know how to access it. Good advice indeed!

With *DiscEd* comes a band of other utilities for putting right faulty discs. While reviewing the product, I deliberately trampled on discs in a variety of ways and was able to recover lost data on all but one occasion – a pretty good success rate.

FOUR WAYS TO LOSE YOUR FILES

Disc Errors

Physical faults on the disc are bound to happen occasionally. In such cases, *Recover* can be used as above to extract the data, including errors. Again, this is the most you can realistically expect.

Depending on the type of file you may still need to do some manipulation of the recovered data to edit out the dodgy bits.

Deletion

The easiest way to lose a file is to delete it by mistake. The *Disc Rescue* manual is full of good advice about taking backups but if the worst happens, there is hope.

DiscEd can locate files quickly if you know a string to look for, such as a variable name or word. The details of where the file is can be copied from the editor to *Recover*, which will then permit recovery. Arc files are really deleted (unlike PC files which are simply marked as deleted) and recovery is unavoidably awkward. Furthermore, E (and now F on the A5000) formats permit files to become 'fragmented'.

Undeleting such a file means finding all the bits with *DiscEd* and recovering them individually. Although *Disc Rescue* does all it can, there may be no way to avoid the detective work.

Broken Directory

If a directory gets trampled on, this dreaded error message can appear. Any files in it will still be intact, but inaccessible. The *RepairDir* utility is fairly good at sorting out mangled directories, although if they are in a particularly bad way you may have to search out the contents individually, using *DiscEd*. There is a special option when $ itself becomes corrupted and the manual wisely advises you not to store files in the root directory as this is accessed most often and is therefore most prone to errors.

Corrupt Map

The disc map is an area on the disc which describes which sectors are free. Dodgy sectors can also be 'mapped out' in the map. There are two sorts – old (on L and D discs) and new (on E and F discs) and *FixMap* can cope with both.

Only old maps can be rebuilt by going through the directory structure (which *FixMap* duly does). New maps are stored twice so *FixMap* can sometimes correct a map fault by replacing the bad copy with the good. Also, *DiscEd* offers a Recalc menu that can be used to 'correct' checksum errors in maps, directories and so on.

CONCLUSION

Disc Rescue is a well-written, highly usable suite of utilities with a window-based disc editor at the core and an excellent manual. It is the only commercial package available at the moment, but thankfully it is also a good one.

PRODUCT DETAILS

Product: Archimedes Disc Rescue
Supplier: Look Systems, 47 Goodhale Road, Bowthorpe, Norwich NR5 9AY
Tel: (0603) 764114
Machines: All Risc OS machines
Price: £35

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GAME SHOW

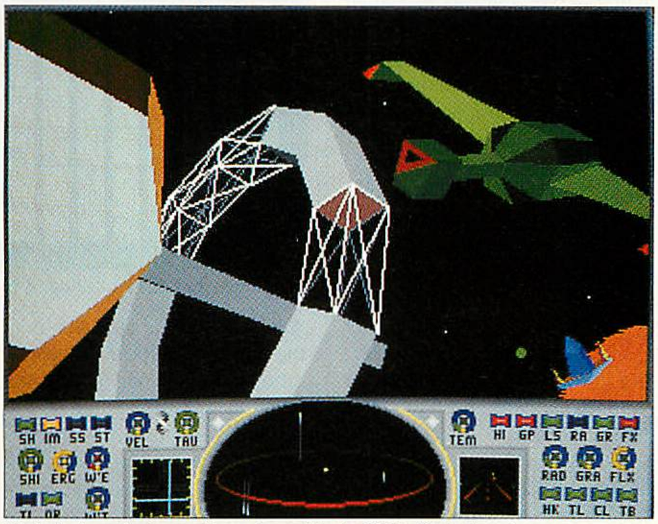
Hark, a game has been born and, lo, The Fourth Dimension is to publish it. *Black Angel* looks like a space shoot-em-up with plenty of high-tech gadgetry and good graphics. The information from the publisher, however, is written in a quasi-biblical verse that makes deciphering any sort of description about the plot or features of the game somewhat tricky.

Presumably, this is the intended effect, meant to wind us all up into mega suspense. The author, Gordon Key, has been working on the game for nearly a year and already has feathers, such as the car game *E-Type* and shoot-em-up *Apocalypse,* in his cap. However, The Fourth Dimension must think highly of *Black Angel* because it plans to launch the game in July at the fairly steep price of £34.95.

Last month the French games company, Eterna, demonstrated its *Zarch*-style graphics game to us (as reported in last month's Game Show) which will be released at the *BBC Acorn User* Show at Wembley in October.

Entitled *Aldebaran,* it is a slick-looking 3D space game which is loosely based on the plot of *Star Wars* and is, indeed, quite reminiscent of *Zarch* in places, complete with patchwork landscape and a hovering space-craft controlled by the mouse. Your ultimate task is to halt the destructive activities of aliens who apparently have nothing better to do than vandalise the nearest star by shooting large nuclear 'thingies' at it in an effort to spark off a good firework display of galactic proportions – something the inhabitants of Aldebaran, the nearest planet, are a bit nervous about.

But flying around a piece of patchwork is only half the game. You must also travel to several different planets, *à la Elite,* and explore your own spaceship room-by-room in the style of an adventure game.



High-tech gadgetry and good graphics in TFD's Black Angel

The game play promises to be equivalent to a cross between *Elite* and *Zarch*, with 256 *Elite*-style missions to be completed across 15 planets. But, while in *Elite* you might be given an object at one planet to be dropped off on another, in *Aldebaran* you first have to find the object on the planet's surface by flying round in the ship to look for it.

Another feature of the game is that it is played in real time: you only have one week to finish the mission, though obviously you can always try again if at first you don't succeed! Also, a few extra touches have been added in an attempt to enhance the *Zarch* landscape, such as waves in the water areas and lightning. At the end of the game there is a Death Star scene where you have to pilot your ship along a trench and fire torpedoes into the centre. *Aldebaran* comes on three discs and will retail for less than £40.

A few months ago we mentioned the underwater action game *James Pond* from Krisalis Software and hinted that the built-in cheat mode can be accessed by using the name of a Swedish guitar player. Admittedly this does not give you much chance – as *BAU* reader Paul Gardner discovered, having 'exhausted the encyclopedia and the music section of the school library and local library'. Fortunately for Paul and those in his position, Anneli Carlborg has written in from Märsta, Stockholm in Sweden to provide the missing information. Play the game, pause it using TAB and then type YNGWIE J MALMSTEEN, including the spaces. Easy, eh? This will render Mr Pond invincible.

Twelve-year-old Samantha Clarke from Doncaster has sent in some useful code words you might like to type in while playing the caveman platform game *Chuck Rock*, from Krisalis. When Chuck and company pick up their gear and start to make some music it is time to type in either or both of these words: ERMINTRUDE will endow Chuck with an iron constitution that protects him from all the baddies and anything else that goes squelch and plop; PINKYANDPERKY turns Mr Rock into a psychedelic long-haired hippy guitarist who can get really high by flying.

Arxe Systems, the publisher of *Blitz*, *Bambuzle* and the shoot-em-up game *Scorpius* (hopefully out before the *BBC Acorn User* Show), has announced some more projects it has on the go. First up is an arcade adventure game that sounds a lot like the old classic *Gauntlet* and currently has the working title *Glove*. *Gauntlet* came out in the mid-80s, first in the arcades and then on the home computer market, and took the games' world by storm. It topped the charts and attracted plenty of favourable reviews, many containing the word 'original'.

The *Gauntlet* castle is viewed from above and up to four players, each with differing abilities, can run around collecting treasure and food while battling with skeletons and other fantasy-style creatures in an attempt to make for the exit.

Its multi-player facility is the most attractive feature of the game and teamwork becomes almost strategic as success relies on deploying the players' various characteristics, such as strength, magical powers, and armour, at appropriate times. With any luck *Glove* will closely resemble *Gauntlet.* Its release should be in August.

We will be able to see part of the game before then, as Arxe will be including a two-level playable demo of *Glove* with a product that is to be released in early June, described as 'the ultimate joystick interface'. There are two joystick interfaces presently on the market, one from Vertical Twist and one from RTFM. Despite being superior, dealers have experienced problems in obtaining stocks of the former.

The Arxe interface will cater for up to four joysticks, making it conveniently perfect for games such as *Glove*. In addition to Atari and Amiga sticks it will also be compatible with the Sega joystick, which brings with it the benefit of two independent fire buttons. This will allow all Arc players to enjoy games such as *Nevryon,* to the maximum.

Next month, don't miss our look at *Quest for Gold.*

Sam Greenhill

MAH JONG – THE GAME

Cambridge International Software
Tel: 071-226 3340
Risc OS machines
£22.95

Many years ago, I used to play Mah Jong with my parents using a very old, original Chinese set, complete with ivory pieces and mahogany racks. Admittedly, I have only played rarely since then, but I was very interested to discover CIS's *Mah Jong Patience*, released last year, and I played the game extensively.

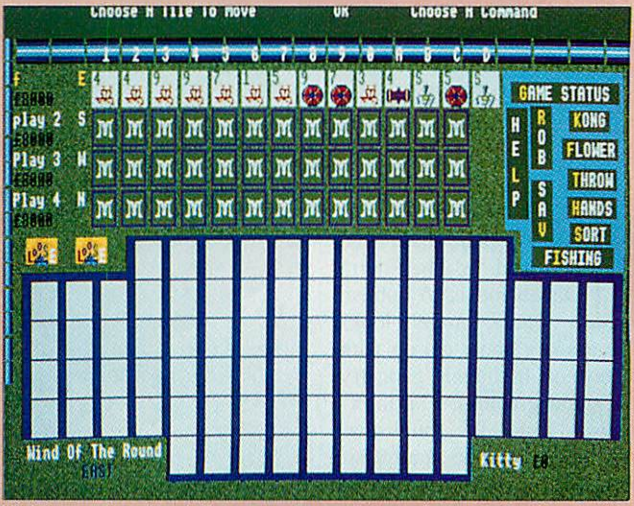
Mah Jong is an old Chinese game which is similar to the card game Rummy, although much more elegant. And so the Archimedes, with its excellent graphics, should make an good basis for the definitive computer version of Mah Jong.

But sadly, the standard set by *Mah Jong Patience* has not been continued with *The Game*. An appalling title page leads to a list of seven questions that have you immediately diving for the badly-written manual. Apparently the game is 'European Mah Jong' and features a whole host of extra bells and whistles over the traditional Chinese version, all of which are unnecessary.

The game play continues in the same vein: a cluttered non-desktop mode 12 screen, garish tiles, unfriendly user interface, unhelpful help...

At the very least I was disappointed with the standard of graphics. With a little more time, a graphic artist and mode 15, they could have worked wonders. The user interface? Well, I ask you, when selecting an option from a menu, do you expect to use the left mouse button to scroll up, the right for down and the middle to select?

Much of *Mah Jong* is based on tradition; the look and feel of the pieces, and so on. Without an attempt to re-create these – this version doesn't even come close – much of the original atmosphere is lost.



Mah Jong – but does it live up to the traditions of the original?

Another obvious omission is in the game play itself. The traditional Mah Yong is a game for four players which could be fun. However, with this version, there is no way to let anyone else play as the computer assumes control of the other three hands.

As to how well the computer plays, I cannot say as I could not bring myself to play a complete game. Unless you're a hardened Mah Jong nut, with a good understanding of the European version, I suggest that you give this one a miss. Even if you are, I bet you would feel a bit silly whistling to yourself when the corners of the wall are removed. Maybe one day someone will write a decent version of this game, with the original rules and Chinese graphics. If they do, it may well prove a hit.

Graham Blakely

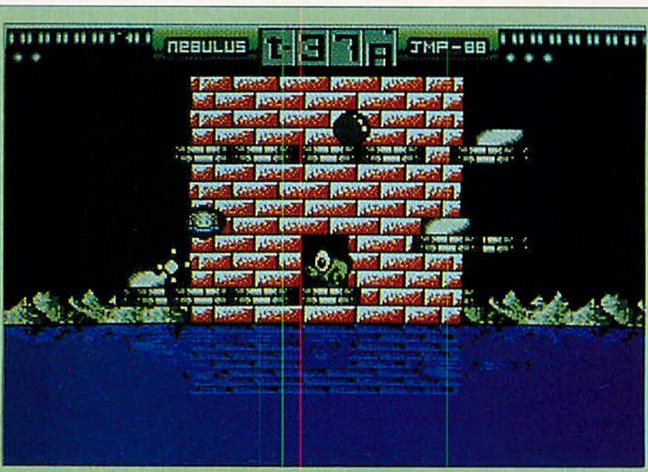
NEBULUS

Krisalis Software.
Tel: (0709) 372290
Risc OS machines
£25.99

Continuing its excellent policy of siphoning off all the best games from other formats, Krisalis has produced the Archimedes version of a game which has been phenomenally successful across the board.

Nebulus is actually a bit of a dinosaur in terms of computer games, first appearing in 1988. But the fact that it is still around is testimony to the its astonishingly playability and addictive nature.

The graphics are a bit bland but cute enough, while sound is the usual collection of unearthly samples. Your job is to climb a series of cylindrical towers which protrude from the ocean, but this is not done in the usual flat ladders and levels way. Your third person viewpoint rotates around an axis which runs down the middle of the tower, so your character stays still horizontally, while the rest of the world literally revolves around him.



Nebulus – time is your worst enemy with this game

This means that for the first five minutes you will be completely disorientated. After that you had better have some time to spare, since nothing short of a hurricane is likely to make you move away from your screen for the next few hours.

In the form of an unusually agile frog, you must make your way upwards by negotiating a treacherous system of platforms and lifts. It is possible to go through the tower and out the other side by entering one of many doors in the wall. But, unless you know what you're doing, this can land you in some tricky situations, sometimes shoving you out into mid-air, with nothing between you and the water below. Various bouncing blobs will impede your progress but most of them will respond nicely to a blast from your gun. Time is your worst enemy and playing *Nebulus* is a bit like playing snakes and ladders against the clock as you frantically try to climb up, but inevitably fall down, in your haste. Each level has a graphical theme and upon completion you have the chance to win bonus points by catching fish. This takes place as you zoom through five levels of parallax in your froggy submarine – although why a frog would ever need a submarine is never called into question.

Other nice touches include the rippling effect in the water, which also has a shimmering reflection of the action above, and some funky music which is played between games. On the down side it is very irritating that there is no way to skip levels once you have got the hang of them.

Nebulus has the air of an early 16-bit release but, nonetheless Arc players have a treat in store.

Mat Tizard

DREADNOUGHTS

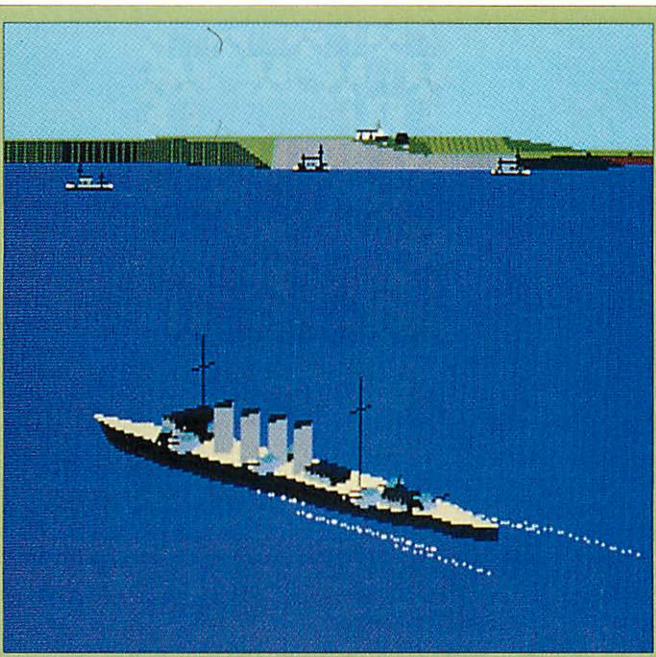
Turcan Research Systems
Tel: 071-625 8455
Risc OS machines
£34.95

Any naval buff will tell you that iron battleships reflected the pinnacle of sea power for almost a century. And this games simulation from Turcan Research adequately presents the might and majesty of that age.

Turcan, who produced the excellent *Waterloo!* has created three discs that trace the history of iron battleships through 50 years of naval engagements. *Ironclads* and *Bismarck* are available separately and create scenes from the late nineteenth/early twentieth and World War Two periods respectively.

However, the most varied disc in terms of scenarios and types of engagement is *Dreadnoughts*, dealing with World War One naval power.

Dreadnoughts' broad range of scenarios is sure to tax the skill of most players. It is probably best to cut your teeth on the *Seatrial* program, which recreates a channel battle between fast and light naval cruisers. The great thing about *Seatrial* is that you can get to grips with the information and tactics you will need for future, larger engagements.



The Dreadnoughts Simulation helps you to capture the drama of iron battleship warfare on the high seas, with non-stop live action

You have numerous choices, including choosing sides and employing the use of the computer to play the opposition. Positioning and communications soon become clear once the scenario starts.

There is no point in signalling ships or requesting sightings when you are not sure of your command responsibilities, or how far you are from the enemy. So there are frequent communications from the fleet and a fully accurate sea chart that comes with the game. Simple scenarios, such as *Seatrial*, prove to be excellent confidence boosters for your tactical prowess. The command structure enables full control over both ship and fleet and the player is free to engage, withdraw, request positions, take the helm and even abandon ship.

This is where the real fun comes in. Suddenly you realise that you are in full command of a battlefleet, which is no small undertaking in a battle such as Jutland.

The growing excitement is reflected in the excellent graphics and sound effects. Indeed, the level of realism in the various battle scenes is nothing short of fantastic.

Engagements are run in six-minute cycles and usually manage to end at the historically correct time. Victory, which is often difficult to determine in naval warfare, is calculated on a fairly reliable points system.

Attention to detail is the trademark of a Turcan progam and this one is no exception. Everything is accounted for, from damage control to near collisions and even raging gunfire. The result is a wide range of scenes that reflect the confusion and excitement of battleship warfare.

However, doing some background reading is useful. The manual provides most of the information you need to play the game, but if you're going to be Beatty for a day, then you may need just a *little* extra tactical information up your sleeve.

All in all, an enjoyable game, not just for the non-stop action but also for its attention to realism. But it does live up to the Turcan reputation – if you don't know your history then read, read, read!

Matt Prior

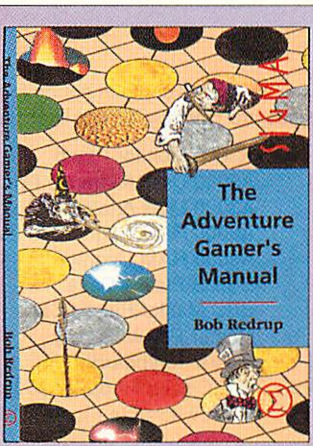
BOOK REVIEW

Adventure Gamers' Manual by Bob Redrup
Sigma Press
Tel: (0625) 531035
£12.95

The appearance of Magnetic Scroll's adventures on the Archimedes, has really inspired my adventuring instincts again. And so I was very interested to see Bob Redrup's book, *The Adventure Gamers' Manual*.

The manual is really aimed at newcomers to the adventure games world, and I would say there would be little of use here to hardened adventure hacks.

It covers a wide range of adventures, focusing mainly on those for Acorn machines,



although others are covered. Bob has a firm background in games of all sorts and he dwells on some of the most common problems encountered in adventures, without revealing too many secrets of any particular game.

In other words, the book contains many pointers and ideas on how to go about solving adventures, but leaves the actual steps down to you.

More specifically there are sections about getting started, what to look for in location descriptions, mapping techniques including the dreaded maze, and many sorts of puzzles, both single and chained. The concluding chapter contains a list and description of the author's favourite adventures along with a number of recommended games.

Bob's background has enabled him to draw on many examples from different games to illustrate points and, as far as I can tell, he has missed very little out. Don't be put off by the inclusion of details



The book could help you enjoy adventures like Guild of Thieves

from games you do not know. It is the techniques, rather than the actual points, that prove the most useful to the reader.

This book is likely to appeal all those users who possess the adventuring spirit, like the idea of adventuring, but haven't got a clue how to go about it.

Dave Lawrence

POIZONE

Eterna
Tel: (0933) 279300
Risc OS machines
£19.95 plus £1.50 p&p

Take an eight-bit classic game, add some fancy graphics and sound and you have *Poizone*. Based on the Beeb game, *Pengo*, *Poizone* puts you in the flippers of Zozo the penguin, whose task is to save the planet from ecological disaster.

The game is set in a scrolling world, inhabited by various animated splodges who would prefer to see a world filled with CFCs and radioactive waste, rather than the thriving green land you must strive to create.

All kinds of nasty substances have to be cleaned up by crushing them against, or squashing them between, blocks which are littered around the land. Occasionally, special blocks and squares appear that will either help or hinder Zozo in his quest. Diamond blocks for example, will produce a bonus when arranged correctly, in a similar way to the original *Pengo* game. Some blocks will slow Zozo down and it is up to the player to find out which blocks have what effect.



If you enjoyed playing Pengo on the Beeb, you'll love Poizone on the Arc

As well as contending with a short time limit, Zozo must avoid or destroy the nasties that roam each level. Making contact with a nasty doesn't kill you, but it will stun you for a few seconds.

To start with, *Poizone* is relatively easy and it doesn't take long to complete the first couple of screens. After that the number of blocks increases and it takes as much time to work out how to dispose of them as it does to demolish them in the first place.

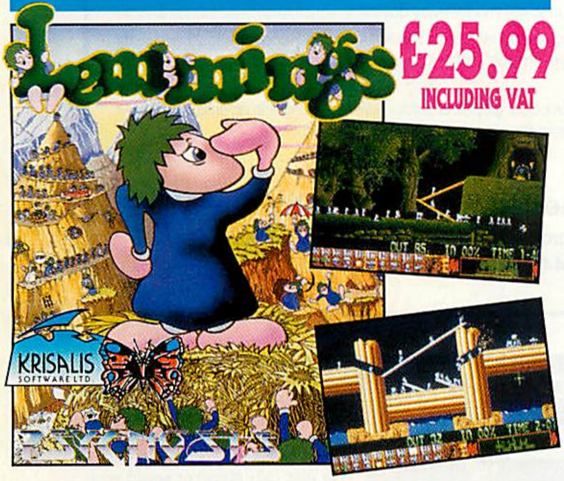
Each block type must be destroyed in a certain way: don't crush the radioactive blocks together! This adds a *'Reptonish'* puzzle element to the game which greatly improves the playability. When five levels are complete (there are 90 in all) there is a bonus level where you get the chance to squash as many nasties as possible. A password is shown so that you can skip the earlier levels if you wish.

Poizone is created in 256 colour, with lots of animated bits. Although they don't exactly stretch the Arc capabilities, they do suit the game well. Sound is on a similar level and sampled voices signal the end of a level.

If you enjoyed *Pengo* on the Beeb, you will love *Poizone*. It's not state-of-the-art but at twenty quid, it is good, wholesome fun for all those would-be planet-savers!

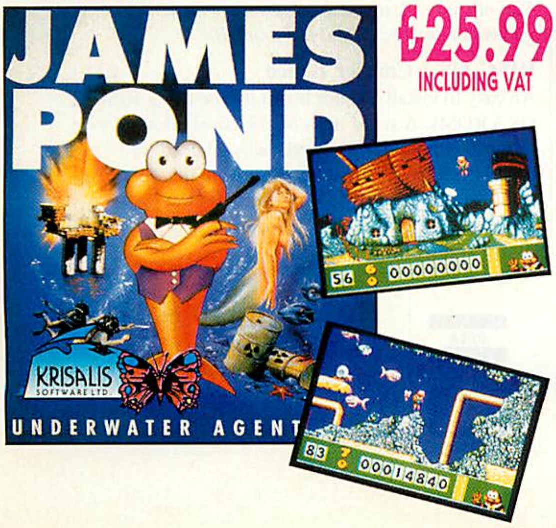
Rob Miller

BBC A3000 & ARCHIMEDES SOFTWARE











Down on the planet Nebulus all is not well. Someone or something has been building giant towers in the sea and they didn't even apply for planning permission.
In the offices of Destructo Inc. you awake from your afternoon nap with the phone almost erupting on your desk. The boss is shouting about some little destruction job he's got for you. Still half asleep you feel like throwing the phone in the bin but he starts talking about the brand new Mk.7 Mini-Sub he's got for you and the words "pay rise". You're out of your office in a flash, leaving the phone dangling out of the window as the boss goes on to talk about the extreme danger involved...

"Nebulus is a mentally stimulating, reflex testing, light hearted game that must rank as one of the best ever releases.
"Commodore User" CU Screen Star 92%

" The action grabs you right from the start and doesn't let go"
'Zzap' Gold medal Award 97%

"Nebulus is simply brilliant" "C+VG" 96%

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ARE THE NEW ACORN PORTABLES READY?

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STAR GAZING

The sky is the limit for users of *PDSview* from Spacetech. This unique Risc OS package is designed for manipulating satellite and astronomical images. With CD-Rom images from NASA, it offers a universe of possibilities

SOUND SENSE

We continue our series on the sound capabilities of the Archimedes by looking at some standards for use in samples. We'll also be showing you how you can incorporate sounds into your own programs

PLUS

C YOU...

Dave Acton concludes his series on C programming with a routine which helps you to construct a year planner for birthdays and other diary entries

ABUSER RETURNS!

Just when you thought it was safe to go back into our editorial pages – Acorn Abuser is back! We rake over the coals of *BAU*'s first ten years and revisit the column you all loved to hate

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QUESTIONS AND ANSWERS

Q I am a doctor working in the health service. I would like to put together a database of various scientific papers but rather than create my own, wondered if there was a professional one for the A3000. I know there's one called *EndNote* for the Mac. Is there a similar one for the Archimedes?

K Rhodes
West Bridgford
Nottingham

A Scientific databases supplied on disc are usually fairly small and very specialised. The way they work is as follows: at regular intervals, the subscriber receives a disc containing the latest update, which is usually a list of 'abstracts' of papers published in particular journals.

As far as we know, there are no such postal databases specifically for the Archimedes format, but there are many aimed at the PC and published on low density Dos discs which your A3000 could read under its PC emulation.

But in fact we would suggest another option. If you buy a Modem and appropriate comms software (such as *Hearsay2* or *ArcTerm7*) you can subscribe via the international packet switching network (PSS) to academic databases all over the world. These are much bigger than their postal relatives; they're updated as each new journal is published and hard copy of papers you're interested in can often be ordered at the touch of a button.

Connection charges are sometimes expensive but you can save a lot of money if you download abstracts to your computer, rather than read them on-line. Talk to British Telecom about Telecom Gold and PSS.

Q I have a BBC Model B computer and would like to run *View* and other software on it. I have recently obtained an Aries B12 board (with a number of Roms) and would like to connect it to my computer. Unfortunately I do not have the smaller board and ribbon cable needed, or the utility discs to go with *Printmaster*. Please can you suggest where I can obtain these items or, if this is not possible, which socket I can plug the *View* chip into.

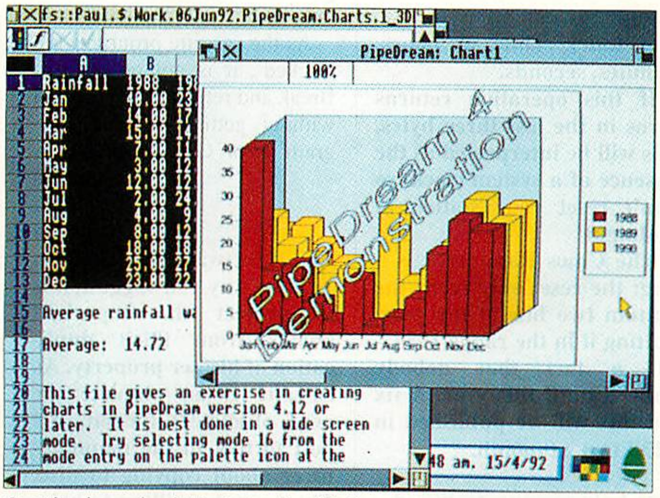
A Larcombe
Bridgend
Mid Glamorgan

A Sad to say, the Aries B12 board is out of production and the small board that connected it to the beeb is unavailable.

Since the PCB in question is a quite specialised two-layer design, it's probably cheaper to buy a whole new Rom board than to make one replacement. So, unless any kind soul out there has the component you need and wants to come to an mutual arrangement, the B12 is of no use to you.

The good news is that you still have a bunch of Roms that may come in handy. To fit a Rom in your beeb, take the lid off and then undo the two bolts which hold down the keyboard. This will reveal a row of five large sockets on the right hand side of the main board, at least three of which will be occupied by the operating system, the DFS and Basic, none of which you should remove. If the two remaining sockets are vacant, you can install your applications in either but take care not to bend the legs on the Roms (a long thin screwdriver is useful at this point).

If there is already something there, you can either swap it or buy a new board (solderless Rom/Ram boards for BBC Model B are about £40 plus VAT). Once installed, *Printmaster* will work without utilities, just type *HELP PRINT MASTER for a list of commands.



Can Pipedream load Wordwise Plus files?

Q I have a dissertation which was typed out for me on a BBC Model B using *Wordwise*. The text is on two 5.25in discs. Is it possible for me to transfer the information onto 3.5in discs to be loaded into *Pipedream* on an A3000? I don't have the *Wordwise* software but I do have access to a Master 128 and a Hybrid disc drive.

A Hodgkinson
Fenham
Newcastle on Tyne

A *Pipedream* does not read *Wordwise* files in their native format. In order to transfer them, you must first get on to a BBC machine with *Wordwise* on board, load up each file and then use the Spool option to save a text-only version under a new name. These files can then be copied across to a 3.5in ADFS disc

PROBLEM SOLVED

In May, we featured a problem from W Briggs of Co. Down concerning a Canon BJ330 wide carriage printer on which he was trying to print A2 size posters. He was using an LQ850 printer driver and, unless it was set to continuous paper the printer gave an automatic form feed after the first 11 or 12 inches of the 23.5 inch sheet. Keith Archer, customer services manager of Watford Electronics, has met this problem before and wrote in with a 'nice fix' as follows:

Make a copy of the Acorn *PrinterDM* application on a separate disc. Open the *PrinterDM* icon and load the text file *PrData* into *Edit*. Locate the line which reads Job Prologue, followed by an empty string "" and, between the quotes, type the following escape sequence:

<27><67><0><22>

This sequence should also be added, within the existing quotes, to the two Job Prologue sequences further down the listing which control Draft and NLQ print modes. The Job Prologue has got nothing to do with the Old Testament, it sets the printer up before sending text to it. In this case it sets the page length to the maximum available, 22 inches. Once the new version of *PrData* has been saved the alternate *PrinterDM* can be used for large scale printing simply by installing it on the desktop instead of the usual driver. Thanks Keith!



The exclusive BAU knitting program

on the Master 128 and loaded into *Pipedream*. All text formatting done in *Wordwise* (bold, underline etc) is lost in the process and will have to be done again – but that's probably why you're moving to the A3000 in the first place!

Q Please could you tell me how to read the time from either the Econet clock or the fileserver? I need to know this because at college the clocks on network Archimedes are incorrect, especially since the clocks went forward an hour.

Also, do you know why, when Cmos Ram is reset by holding down delete and switching on the power, the year on the internal clock is changed to 1988?

T Kimber
Fleet
Hants

A **You can get date and time from your network server using Osword &14. When you make the call X% and Y% should point to a block of, say, 16 bytes of which the first eight bytes should contain the following decimal values: 0, 15, 0, 16, 0, 0, 0, 0.**

On return from the OS call, the first four bytes contain a zero, then the number of bytes returned, a command code which you can ignore, followed by an error code. If the error code in byte three is non-zero, the operation has failed; otherwise bytes four to eight of the block now contain date and time as follows:

Day, Year since 1981 (top four bits) and Month (bottom four), Time in hours, minutes, seconds.

If this operation returns zeros in the last three bytes, this will be interpreted as the absence of a system clock, so don't reset your station at midnight!

The Cmos Ram error is a bug; the reset only reads the bottom two bits of the year, putting it in the range 1988 – 91, a fact that nobody noticed until this year. A fix for this will be published in *INFO next month.

Q I have an Archimedes A5000 and wish to fit it with a suitable 5.25in disc drive to use 1.2Mb MS-Dos floppies. On p36 my User Guide tells me that this format is supported and then tells you to contact 'your supplier'. This is where it all comes to a stop. Please help!

A Norris
Basingstoke
Hants

A **It's possible to connect the A5000 straight to an additional drive by a 34 pin IDC cable and then alter a link on the circuit board to tell the computer what sort of drive it is, but this is not recommended.**

In cases like this, it is often better to install a well designed interface between the two devices to protect your precious machine from whatever drive you've decided to stick on the end of it. As the A5000 is still new to the marketplace, no-one is selling such an interface yet and, since the Dos 5.25in HD format is steadily dying out, it's doubtful that anyone ever will. Therefore, until some enterprising hardware person proves it wrong, try to get your 1.2Mb discs transferred onto 1.44Mb Dos discs which your machine can read easily. If you're regularly transferring data from a particular PC, seriously consider buying a 3.5" drive for it.

Q I first became interested in computing nine months ago when I bought an Electron in a car boot sale. As I own a disc drive, I would like to put my commercially bought programs, which are on cassette, onto disc.

As the cassette programs are 'locked', it is not possible to Break and retrieve the program without getting a 'Bad Program' error. Can you help?

K Lillis
Tooting
London

A **If software is 'locked' in the way you suggest, it is to protect the copyright holder from illicit duplication of his/her property. As cassette is an obsolete (or near obsolete?) format, it's best to talk to the manufacturer about copying to disc. They may be willing to help, for a small fee.**

Sorry we can't be of more help; as far as we know, no-one has yet been prosecuted for incitement to software piracy (on or off the high seas), but we don't plan to be the first!

Q I have several questions about upgrading my A3000 to Risc OS 3 and, briefly summarised, they are as follows. When is the upgrade due out? What will it cost? Will you need bigger Rom sockets to fit it? Will the existing A3000 disc drive be able to read MS-Dos and Atari discs without special utilities?

T Wiser
Lea Bridge
Derbyshire

A **Acorn have not yet fixed a price or release date for the Risc OS 3 upgrade but it is expected to be launched by the end of this year. The Rom sockets in the A3000 are big enough to take the new chips, although users of Archimedes A300 series and early Archimedes A400 machines will need a small expansion board to accommodate them.**

With Risc OS 3 installed, you will be able to load, format and copy 720K MS-Dos discs without extra utilities. Atari discs would require appropriate software but high capacity discs of any sort (A5000 1.6Mb, MS-Dos 1.44Mb, Mac 1.44Mb.) will remain unreadable without a high density disc drive.

Q I am writing to ask about knitting design programmes on the BBC Model B. I have heard on the grapevine that *BAU* published such a program in the past. Could you advise me whether this is the case. And if so, in which issue?

V Chicot
Pulloxhill
Bedfordshire

A **In December 1989, we published a programme that converted screen images on the BBC into knitting patterns on paper. It can also run on the Archimedes series with a few modifications.**

You can buy back issues from our mail order distributors in Wetherby by phoning (0937) 842489.

HELP US TO HELP YOU

The Questions and Answers page is your chance to have your problems solved. They can be on any topic – you name it and we'll try to solve it. Please send your questions, whether technical or otherwise, to:

Richard Garrett,
Questions and Answers
BBC Acorn User
20-26 Brunswick Place
London, N1 6DJ.

We are happy to answer your queries on these pages, but regret that we are unable to send personal replies to questions sent in. If you send a disc, please put your name and address on the disc itself. It is also useful if you could include full details of your machine, marking your envelope as eight-bit micro or 32-bit A3000, Archimedes or A5000.

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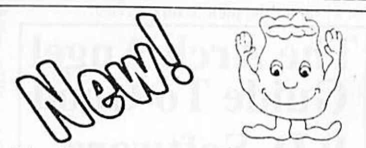
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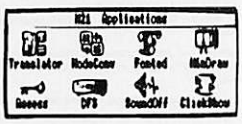
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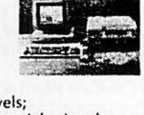
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£15 STAR LETTER

I run a small company which uses an IBM PC for day to day letters, accounts, and so on. Due to the increasing number of reports and special newsletters which we need to produce, I have been thinking seriously about desktop publishing.

Because I would need an additional machine to use for DTP (the PC is very tied up as it is), I decided to look further, and have been considering an Apple Macintosh set-up with Quark Express software.

While on a visit to the recent *Which Computer Show* I came across the Acorn Computers stand and had a chance to look at the A540 running *Impression* software. I was impressed by the set-up and the price, which seems attractive compared with a PC or Mac-based system. I know that you published a comparison between the Arc, PC and Mac last month, but have you done a head-to-head comparison of DTP systems based around these machines.

R Green
Sevenoaks
Kent

Well, the review last month did include a small section on the relative merits of each system for DTP, but we are looking at other articles in the future which will focus on specific solutions offered by the Arc and its competitors.

Meanwhile you may be interested in reading a DTP comparison carried out by Norwich Computer Services. Called Desktop Publishing on Acorn Systems, it costs 75p from NCS, 96a Vauhall Street, Norwich NR2 2SD.


The complete DTP system, featured in this month's competition

SHOOT 'EM SIDEWAYS

I'm writing in response to Daniel Zerafa's letter (*BAU* June 1992) asking for a proper horizontal shoot-em-up in the tradition of *R-Type I* and *II*.

The *Scorpius* project was initiated by myself because I have been an *R-Type* fan for many years and I knew that the Arc was capable of running such a game. *Scorpius* features all of the complexities of the *R-Type* style games as well as alien intelligence, fully animated sprites that are almost full screen in size, and two way parallax scrolling. *Scorpius* pushes a standard A3000 to the limits in terms of processing power, with over 150 custom sprite routines as well as employing complex mathematics to depict special effects from falling snow to the damped motion of hanging objects. The four man development team on *Scorpius* have been working on the game for almost two years, and the release date is September 92.

If any of you have any thoughts or suggestions please write and we will consider them for future releases.

O Jagpal
Arxe Systems Ltd
PO Box 898
London
E7 9RG

EXCELLENT COMPARES

I am writing to say how good I think *BBC Acorn User* is looking these days. As a long term reader I have watched the development of the magazine with interest and its latest incarnation is, I must say, a pleasure to read.

I rather like the nifty new logos at the tops of the pages, particularly the one on the news pages, and all the colour makes it very easy on the eye.

And what about the content of the last issue? Well, I found the article on the Arc versus the Macintosh and PC extremely interesting, not to say courageous. As an Acorn-only publication you must have been pretty confident the Arc would come out on top in the majority of areas, as it would have been a bit embarrassing to have to tell readers to go out and buy a PC instead, wouldn't it! Anyway, I for one was pleased to see that you found the A5000 is the best all-round machine for the best price. Keep up the good work!

B Marwood
Wetherby
Yorkshire

Obviously we have long known that the Archimedes is, in most cases, streets ahead of the competition, although we endeavour to be as fair as possible when assessing it with machines from other environments.

ON THE OPEN ROAD

I attended one of the Acorn Open days in Bristol recently. I didn't really know what to expect, and found that it was a very interesting and worthwhile day.

Apart from having the opportunity to see the latest Acorn machines, and use them, it was a real eye-opener to see how good the software support is for the Archimedes and indeed how helpful the software companies were who attended that day. I also enjoyed seeing your good selves at the roadshow and was persuaded to take out subscription to your excellent magazine. Are the Open Days continuing throughout the year and, if so, do you have details?

L Shipley
Canterbury
Kent

The Open Days have certainly been a great success, and there are plans to continue with them until the end of the year. Venues have yet to be finally confirmed, but we have listed below the towns and cities which Acorn is planning to visit. Watch *BAU* for further details.

Cambridge, June 20; Milton Keynes, 21; Bournemouth, 27; Shanklin, Isle of Wight, 28; Birmingham, Sept 12/13; Portsmouth, 19; Colchester, 20; Blackpool, 26; Oldham, 27; Bolton, October 3; Sheffield, 4; St Helens, 10; Rotherham, 11; *BBC Acorn User* Show, Wembley, 16-18; Swindon, 24; Slough, 25; Nottingham, 31; Stoke on Trent, Nov 1; York, 7; Northampton, 8; Middlesborough, 14; Hull, 15; Derby, 28; London, 29; Computer Shopper Show, Dec 4-6; Bradford, 12; Leicester, 13.

For further details about the Open Days, contact Acorn on (0223) 254200.

NETWORK HINT

Owners of the new A5000 might like to know of this handy hint that will save 'loads' of time while working on Econet. Directory viewers full of *Impression* documents or applications take a long time to open, because the *Boot* files have to be executed and the *Impression* sprite loaded into the wimp sprite pool. On an A5000 this can be stopped by holding down CTRL when opening a viewer.

G Catton
Surbiton
Surrey

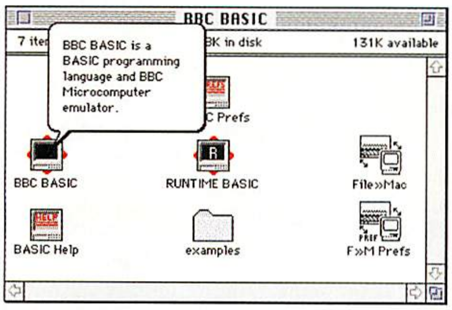
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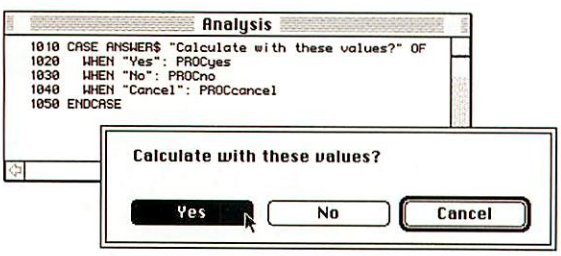


Balloon help provides instant information about the menus and dialogue-box options.

Save Graphics option saves the BBC BASIC graphics screen as a PICT file that can be loaded into other programs.

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Macintosh-style interactive editor provides a scrolling view of program listings with convenient cursor or mouse editing. You can work with any font available on your system and you can display keywords highlighted in bold for easy reference.



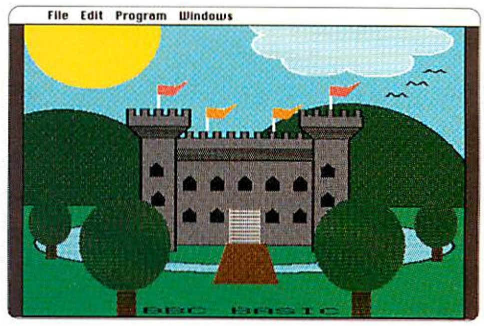
Macintosh Toolbox interface allows you to define your own menus, dialogue boxes, and scrolling lists using convenient BASIC keywords, and use the standard file dialogues for opening and saving data files.

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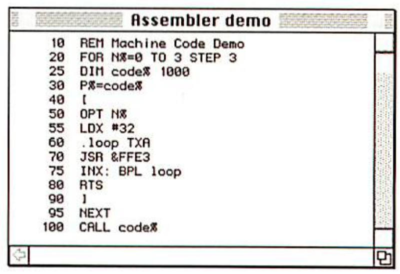
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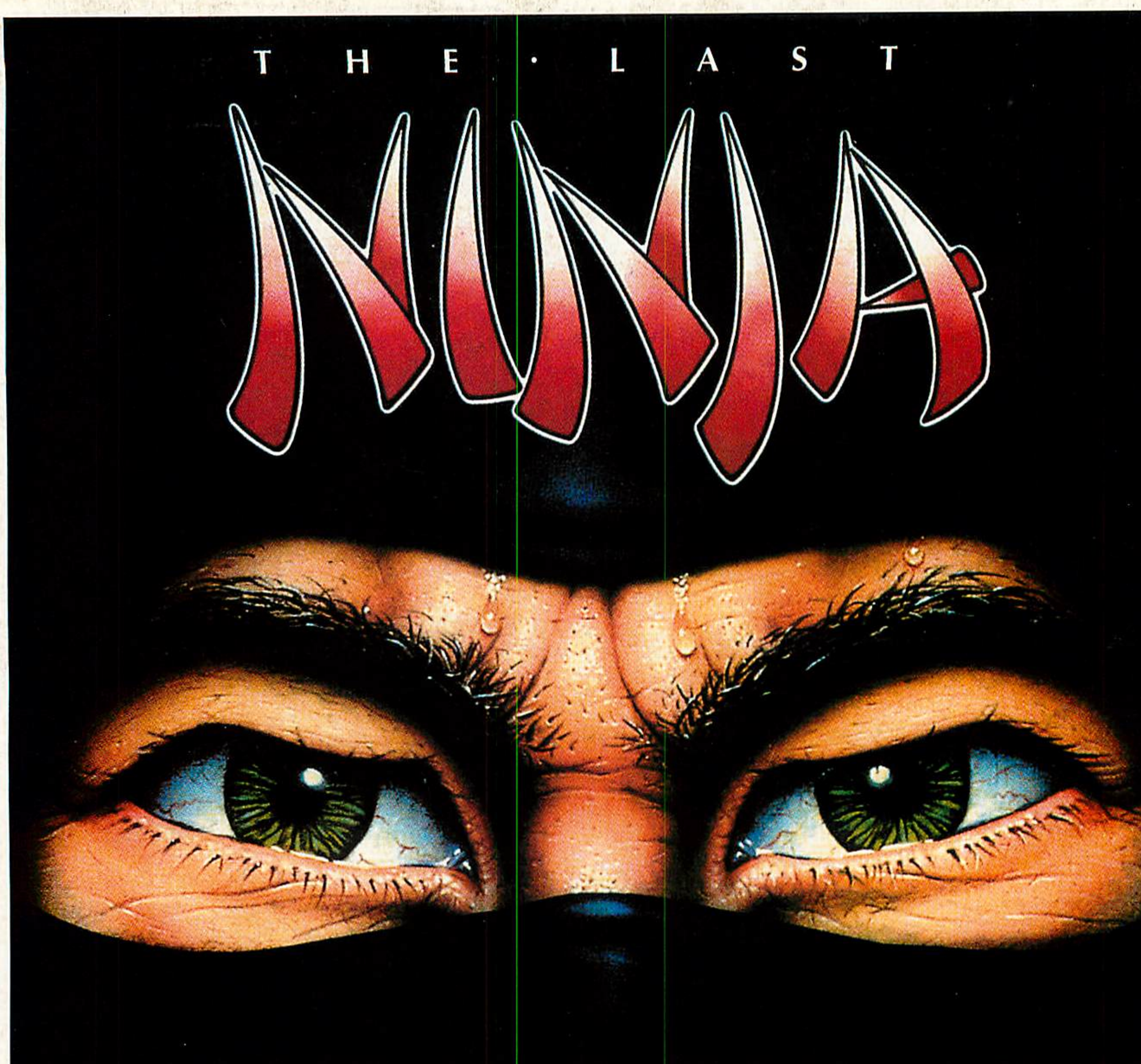
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